D E N T A L

The Veri-chrome system of tooth color selection by contrast . . .

These are the simple steps of the Veri-chrome system of tooth color selection by the "contrast" method.

First, without using the Veri-chrome guide, judge whether the tooth appears to be yellow or yellow-red. Next, estimate to what degree of that color the tooth is saturated.

Assume for the moment that the tooth appears to be yellow of approximate saturation No. 3 (Veri-chrome Tooth Color Y3). ★ ★ ★ ★ ★

Now, using the Color Guide, use R/3 for comparison *instead* of Y/3 (see Fig. 1). If the natural tooth appears to be yellow by contrast—then the original judgment of hue was correct. If it doesn't appear yellow by contrast—then the original judgment of hue was incorrect.

Assuming that the judgment of yellow color was correct, we proceed to check the degree of saturation by the same method of contrast comparison.

The tooth was judged Y/3. Therefore, compare the natural tooth with Y/2, which is less saturated . . . or Y/4 which is more saturated (see Fig. 3).

By this method of *contrast-comparison*, both hue and saturation can be quickly and accurately determined. The simple selection by contrast is possible only with the Veri-chrome Color Guide because of its systematic arrangement of hues and the progressive saturations in each hue and controlled color brilliance.

FIG. 1

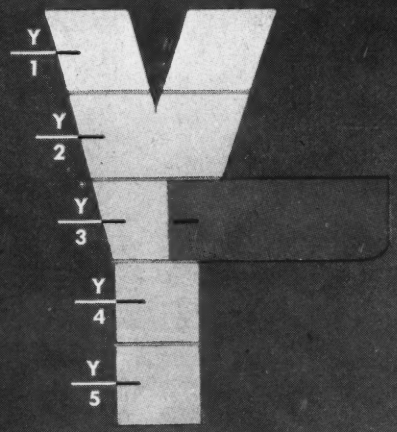
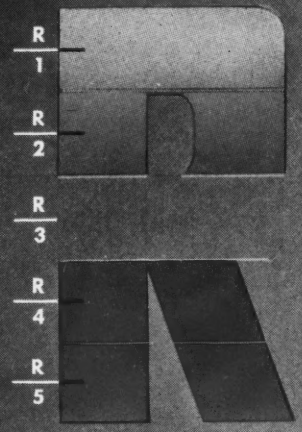
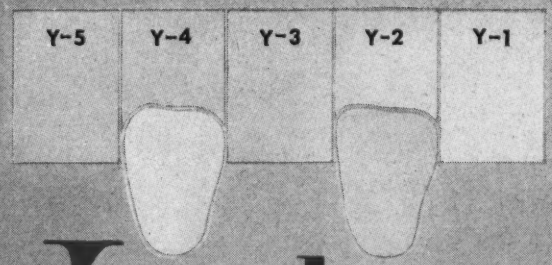


FIG. 2



ALL COLOR SATURATIONS SHOWN HERE ARE INTENSIFIED FOR EASIER PERCEPTION

FIG. 3



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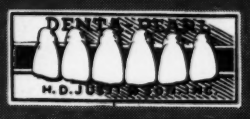

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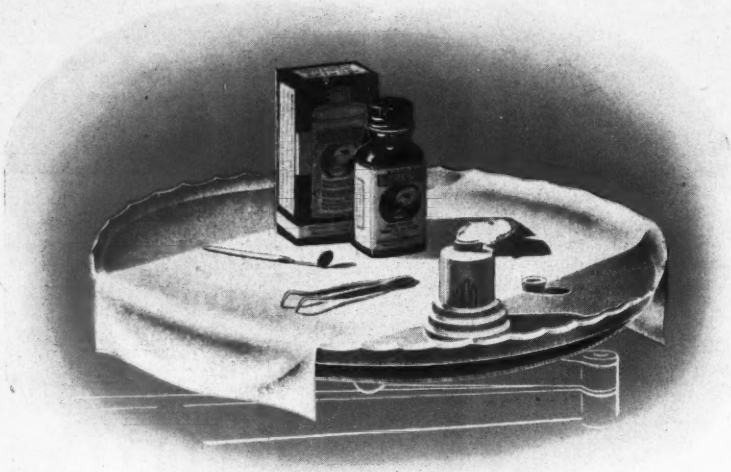

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SUBSCRIPTIONS—In the United States, Alaska, Canada, Cuba, Hawaiian Islands, Mexico, Philippines, Puerto Rico, Central and South America: One year, $3; two years, $4.50; three years, $6. Three-year subscription includes *Visual Education in Dentistry*. (See below.) Elsewhere: One year, $3.75; two years, $6.50; three years, $8.25. Subscriptions payable in advance.

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ADDRESS CHANGES—Please allow two weeks for address changes to become effective; furnish old as well as new address.

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PUBLICATION DATE—The magazine is mailed on the fifteenth of month of issue.

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THE DENTAL Digest

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About Our CONTRIBUTORS

MORTON C. ROCKWITT, D.D.S. (New York College of Dentistry, 1943) was in general practice before entering active service in the United States Army Dental Corps. He presents his technique for constructing an acrylic bridge which employs a gold reinforcement bar between the abutments.

STERLING T. BOWEN, D.D.S. (Northwestern University, and University of Southern California College of Dentistry, 1932) is in general practice. Doctor Bowen wrote for us in March 1938 on an impression technique for immediate restorations, and in November 1938 on a porcelain technique. This month he describes a technique for the SURGICAL REMOVAL OF UPPER FIRST MOLARS.

B. F. DEWEL, D.D.S. (State University of Iowa, College of Dentistry, 1925) limits his practice to orthodontics. Last month Doctor Dewel discussed the developmental stages, anatomy, and normal variations of the frenum and premaxillary structures. In this issue he considers the causes and methods of treatment of separated centrals, and the development and diagnostic tests for abnormal frenums.

LIEUTENANT FRANCIS M. WELLS (DC), USNR, received his D.M.D. at Tufts Dental College in Boston in 1943. He reports the use of 33 per cent sodium fluoride paste in the treatment of hypersensitive teeth.

ROLLAND E. SHIRLEY, D.D.S. (College of Physicians and Surgeons, School of Dentistry, San Francisco) is engaged in general practice. Doctor Shirley suggests A METHOD OF TAKING IMPRESSIONS AND PRODUCING COPPER DIES OF CAVITIES WITH PIN RETENTION.

GEORGE A. MORGAN, L.D.S., D.D.S. (Royal College of Dental Surgeons, Toronto, 1930) is the author of numerous articles which have been published in dental journals. He wrote for us in August, September, and October of 1938. Doctor Morgan presents here the first of his series of three articles on ORAL TUMORS OF DENTAL INTEREST.

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Esthetic Acrylic Bridges

MORTON C. ROCKWITT, D.D.S., Brooklyn, New York

DIGEST

A technique is described for constructing an acrylic bridge which presents a natural separation of the teeth, and an accurate matching of color with adjacent teeth. The technique employs a gold reinforcement bar which fits between the abutments. Manufactured acrylic denture teeth, which come in all desired forms and colors, are attached to the reinforcement bar.

THE ACRYLIC pontic is rapidly replacing the conventional porcelain-gold pontic used in bridges. Acrylic is becoming popular for this purpose because it is easy to manipulate, is inexpensive, and enables better ridge adaptation.

There are, however, certain aspects in which the acrylic pontic does not give the esthetic results that are obtained with porcelain facings. First, there is not the natural separation present between pontics that appears in natural dentition which gives individuality to each tooth. Secondly, it is difficult to match the adjacent teeth properly with acrylic, and to control the gradations of color present in them. It is only when the bridge is completed that the success of the color control can be seen.

We believe that with the use of manufactured acrylic denture teeth and the technique described in this article, we can overcome these drawbacks. We can produce a bridge that is esthetically pleasing, has the naturalness of individual teeth, and blends with the surrounding teeth.

Technique

The following technique is for the construction of a typical anterior bridge to replace the four upper incisors:

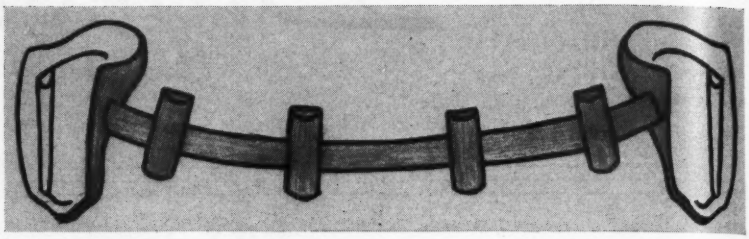
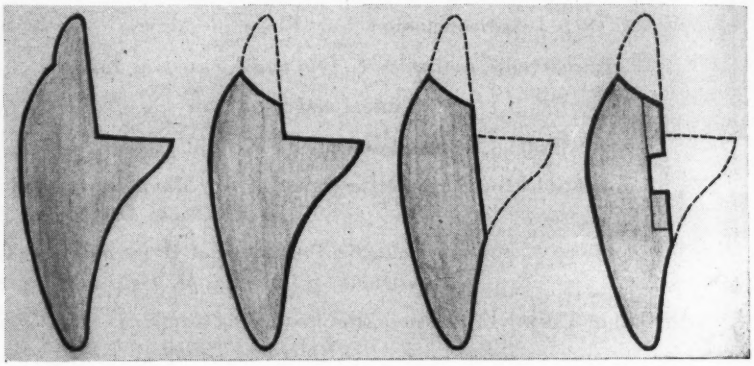
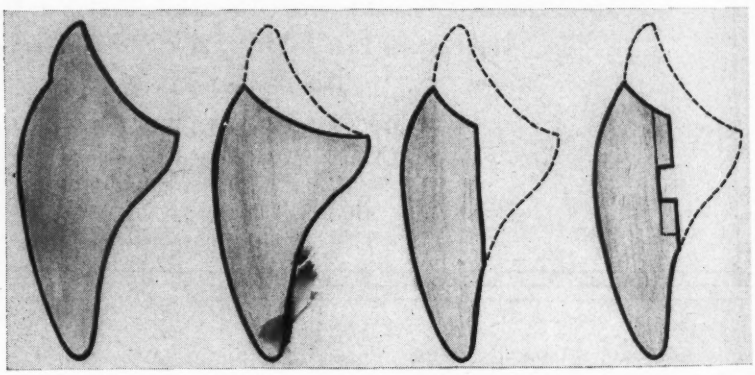


Fig. 1—Three-quarter crowns cast and soldered to gold frame (soldered half-round clasp wire) ready to try in mouth.





Figs. 2A and 2B—Proximal views showing steps in preparation of acrylic facings from the two types of manufactured acrylic denture teeth. Both types are trimmed with equal facility. (Steps 1, 2, 3, and 4, from left to right.)

1. Prepare the abutment teeth for three-quarter crowns, and wax up in the usual manner. Before investing, add a small ball of wax just above the cingulum. This will provide a point of application for a crown remover in a well fitting casting; it will not be necessary to pull on the fine margins of the casting, thereby ruining them. It will also give an exact seat for the casting in the impression to be taken.

2. Take a plaster impression of the upper teeth with the crowns in position. Likewise, take an impression of the lower opposing teeth in compound. Take a wax bite to articulate the models.

3. Paint the plaster impression with a suitable separating medium. Place a small amount of carding wax on the pins inside the casting, and seat the castings in their proper positions in the plaster impression. Seal

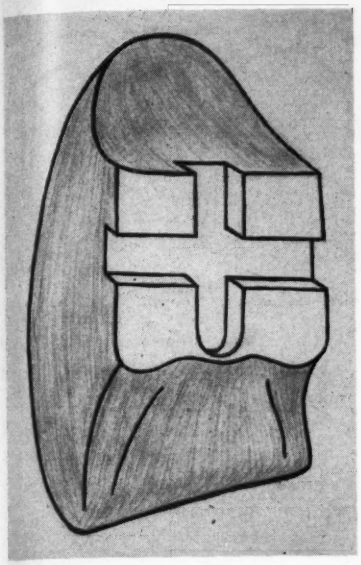


Fig. 3—Three-quarter proximolingual view of prepared acrylic facing, showing cross-shaped grooves on the lingual.

the castings in place with a drop of sticky wax. Pour the impression in cast stone.

4. Pour the lower model in stone and mount the upper and lower models on an articulator, using the wax bite for the correct relationship.

5. Scrape the edentulous area of the cast slightly to give compression of the tissue in the finished bridge and to prevent food from making its way under the pontics. The amount removed in scraping will depend on the firmness or flabbiness of the tissue. Heat the castings slightly and remove them from the model. Clean off the carding wax, and replace the castings on the model.

6. Construct the gold reinforcement bar to fit between the abutments. This may be cast, but it is easier to make it out of 14 gauge half-round clasp wire, soldering on 18 gauge cross bars in the open flame. The cross bars should be positioned at approximately the midline of each pontic and should run parallel to the long axis of the teeth. The main reinforcing bar should be about halfway between the gingival and incisal edges. The cast reinforcement bar can be waxed up readily by using round sprue wax or clasp wax.

7. Fit the reinforcing frame between the abutments, and wax it in place. Remove the assembly from the model, invest, and solder. Make sure the soldering investment covers the soldered cross bars; failure to do this will result in their spinning out of place during the soldering procedure.

8. Pickle the assembly, and do the final polishing of the three-quarter crowns at this time. Try the assembly in the mouth and check for proper fit (Fig. 1).

9. Select four acrylic incisors from standard acrylic denture teeth; the four incisors should fit properly in the space. Check them in the mouth for proper color harmony with the adjacent teeth. These acrylic teeth come in sufficient shades to match almost all teeth. Great care should be taken in selecting these teeth inasmuch as they are the ones that will appear in the finished bridge.

10. The lingual of the manufactured teeth come in two types (Figs. 2A and 2B, Step 1). Both types can be prepared properly with equal facility.

Fit the acrylic teeth to the ridge, using a large stone (Figs. 2A and 2B, Step 2). Do not take the trouble to fit the teeth too accurately; new acrylic will be added later to fill in the discrepancies.

Grind off the lingual half of the teeth, making them appear like facings (Figs. 2A and 2B, Step 3). Do not extend this lingual slice down to the incisal edge.

Using a large fissure bur, cut a cross-shaped groove on the lingual surface to receive the reinforcing frame (Figs. 2A and 2B, Step 4). The horizontal groove should extend through the proximal surfaces. The incisal part of the vertical groove should end just short of the lingual slice, but the gingival end should go through the tissue surface. The grooves should be wide enough to give sufficient leeway for shifting teeth to produce a more esthetic arrangement (Fig. 3).

11. Replace the gold frame on the model and lubricate the ridge area. Position the teeth on the frame to give an esthetic appearance and a proper relation to the lowers in centric and in protrusive excursions (Fig. 4). Flow ivory-colored wax over the reinforcing frame, and build out and carve the lingual surfaces of the teeth (Fig. 5).

Try the assembly in the mouth for esthetics. The bridge at this stage will look just like the final product, and any slight changes can be made readily. Check for proper occlusion in centric and in protrusive excursions.

12. Remove the assembly from the

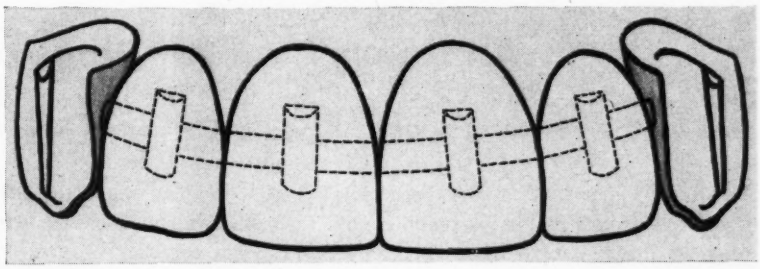


Fig. 4—Prepared acrylic facing in place on gold frame and ready to try in mouth. The bridge at this stage appears exactly as the finished bridge will.

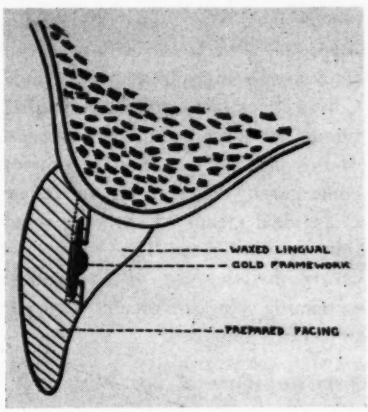


Fig. 5—Cross-section diagram showing relationships of prepared facing, gold frame, and waxed lingual portion. Any discrepancy between prepared facing and edentulous area is filled in with wax; the wax is replaced later by acrylic.

mouth and carefully invest it in a suitable flask with the lingual upward. It is not necessary to adapt tin foil to the teeth. When the stone has hardened, apply a separating medium with a brush and pour the other half of the flask. Heat and separate the halves of the flask, and boil out all traces of the wax. When the flask has cooled to room temperature, paint the special separating medium on the upper half of the mold.

13. Select acrylic of the same shade as the gingival portion of the acrylic teeth used, and pack the acrylic into the flask. It is better to use the gingival shade because it darkens the interproximal areas, giving a more natural appearance. Insert a piece of wet cellophane between the halves of the flask and make a test closure.

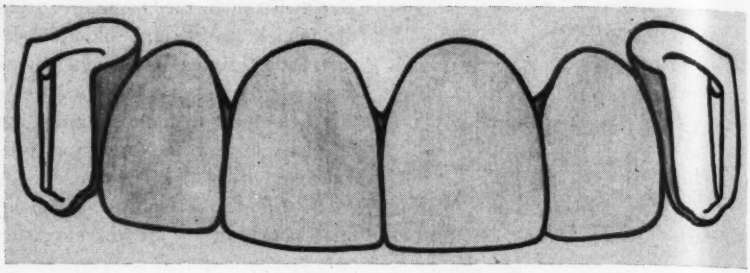


Fig. 6—Finished esthetic acrylic bridge ready for insertion in mouth.

Separate and add more acrylic, or remove any excess material, as necessary. Close the flask and process according to the manufacturer's directions. Let it cool in water over night.

14. Remove the bridge from the flask and polish the lingual with pumice on a fine bristle brush, following this with tin oxide or chalk. Fig. 6 shows the finished bridge.

15. Set the bridge in the mouth and make any minor adjustments that may be necessary. Cement the finished bridge in place in the mouth. The bridge should have a natural appearance and should blend readily with the surrounding teeth.

2414 *Avenue R.*

Anticoncussion Ear Plugs of Acrylic

Lieutenant Lawrence K. Cox and Lieutenant John W. Geller, (DC) USNR

MUCH EXPERIMENTATION has been done with devices for the prevention of aural injury caused by gunnery concussion. Cotton and rubber swimming plugs are used commonly; both are an aid but are not completely concussion proof. Past experience has proved the inefficiency of cotton in resisting high frequency sounds. Cotton does not eliminate ringing, numbness, soreness, and gradual loss of hearing. Its use from a common container by the men on the ranges is an ideal means of carrying infection to the ears. The discomfort caused by the use of the rubber swimming plug is greater than its preventive qualities.

Requirements of Ear Plug

1. It should be easy to keep clean.
2. It should be light in weight.
3. It should be unbreakable.
4. It should be easy to insert and should have good retention.
5. It should admit sounds of ordinary conversation but should exclude high frequency sounds.

Acrylic Ear Plug

The acrylic resin ear plug meets the requirements mentioned here. It is specially built for the individual ear and is the property of the man for whom it was made.

The acrylic plug is constructed to fit the auricle and the canal. The major portion of the plug fills the concave, ovoid portion of the auricle, covering the eminences and filling the depressions. It is molded to fill the fossa triangularis and the scapha down to the end of the curved prominence of the antihelix. It does not cover the lobule, the tragus, or the antitragus, but its smooth outer surface and lower border are flush with these structures as well as with the inner border of the helix. The portion which fills the concha extends inward and fills the auditory meatus to the extent of about 1 cm. medially from the bottom of the concha, thus forming the seal and providing retention. Incidentally, with the marked decrease in meatal irritation, ear fungus infection is prevented by the use of this snug-fitting plug. Its trial use in aeronautics is suggested.

Technique of Construction

1. Dirt or excessive wax are removed from the ear canal.
2. The ear is covered with a thin coating of mineral oil or another suitable lubricant, and a small pledget of cotton is placed about 4 mm. or 5 mm. beyond the opening of the canal.
3. The impression is taken with one of the hydrocolloid materials. The entire surface of the ear within the borders of the helix and lobule is covered. The hydrocolloid material

(*Continued on page* 335)

Clinical and Laboratory Suggestions*

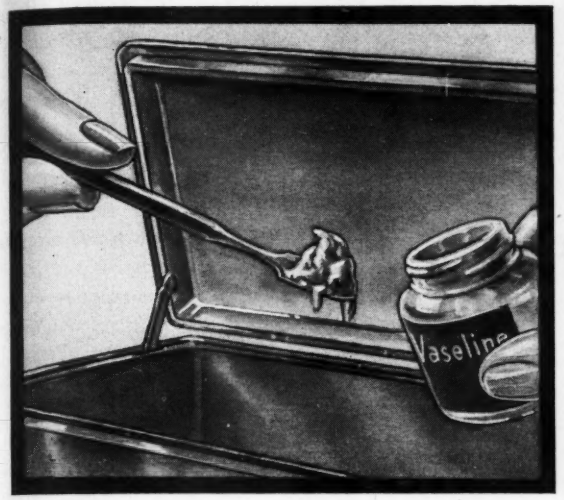


Fig. 1—A little vaseline added to the water in the sterilizer will prevent rusting of the sterilizer and of instruments.

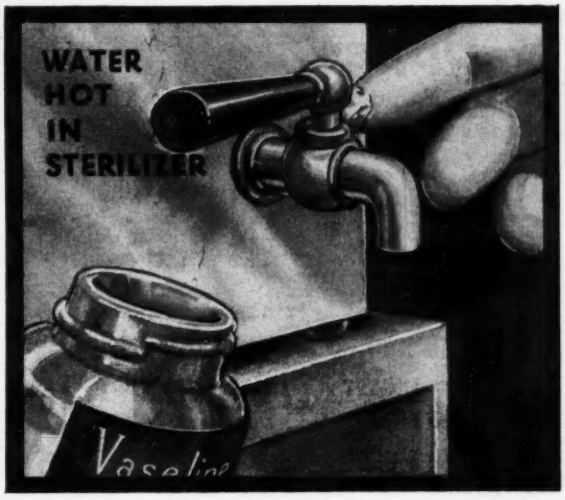


Fig. 2—Apply vaseline around the valve of the sterilizer faucet while the water is hot to keep the faucet well lubricated.

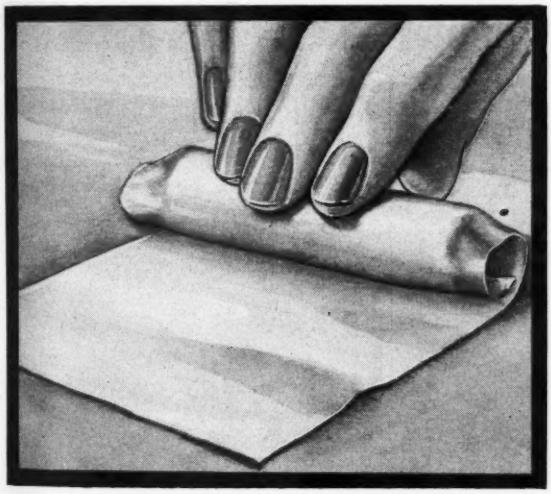


Fig. 3—To prevent irritation from cotton rolls (some patients are sensitive to zinc oxide with which the rolls are treated), wrap the roll in a piece of kleenex before placing it in the mouth.

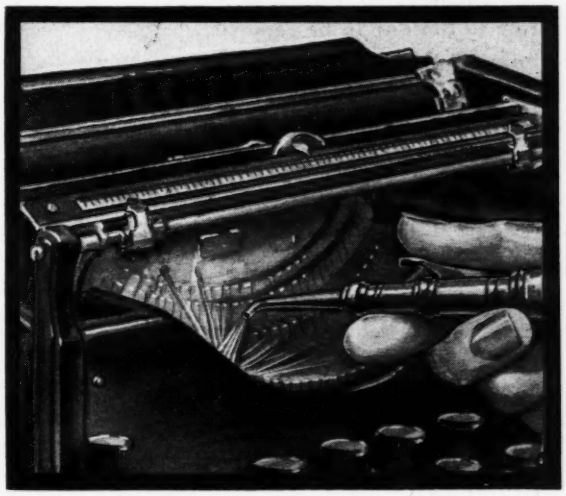


Fig. 4—Blow the dust out of inaccessible parts of the typewriter with compressed air from the dental unit.

*From Arnold, Myrel: Helpful Hints, *The Dental Assistant*, 13:22 (January-February) 1944.

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Send your ideas to: Clinical and Laboratory Suggestions Editor, THE DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

Surgical Removal of Upper First Molars

STERLING T. BOWEN, D.D.S.
Los Angeles, California

DIGEST

A technique is presented for the surgical removal of the upper first molar. The procedure, in which the incision is made over the solid bone of the tooth anterior to the one to be removed, eliminates the danger of fracture of the root tip or of the tuberosity, and of injury to the maxillary sinus.

EXTRACTION OF the upper first molar has long been a problem of dental surgery and in many cases is comparable with removal of severe impactions. The reasons for this are:

1. The length and wide spread of the roots.
2. The proximity of the apexes of the roots to the maxillary sinus.
3. The strength of the buccal plate of bone in this area.

Many cases have been reported in which the roots of the first molar were broken and were pushed into the maxillary sinus when an attempt was made to remove them. This may result in a sinusitis which is much more harmful to the patient than the original condition that necessitated tooth removal. Even in cases in which there is no sinus complication, there is often much pain after extraction because of the "springing" of the bone plates as the tooth leaves the socket. Another complication that oc-

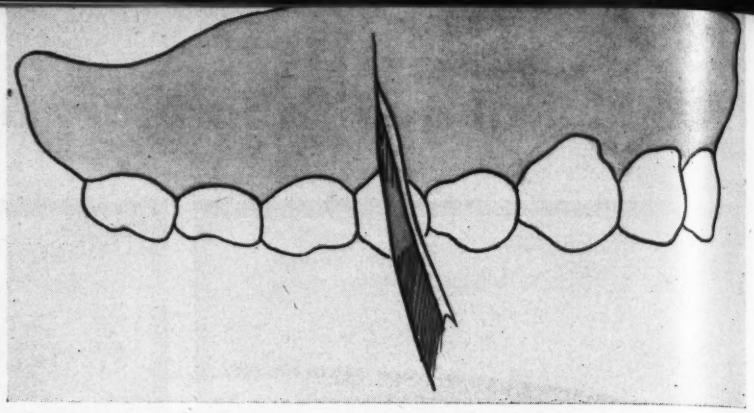
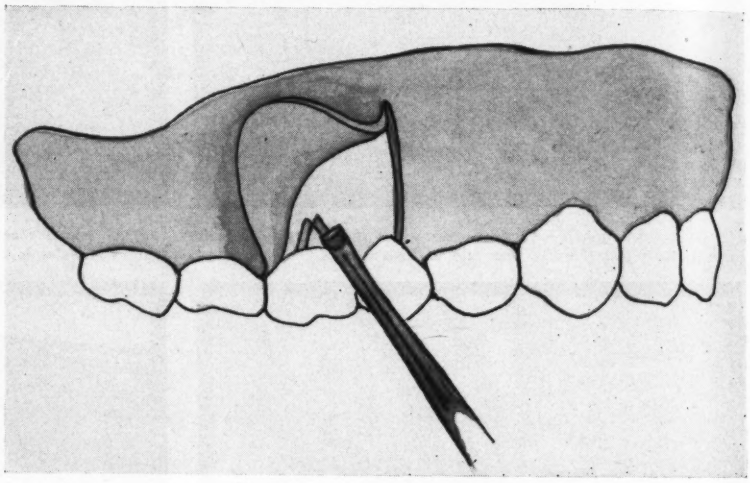
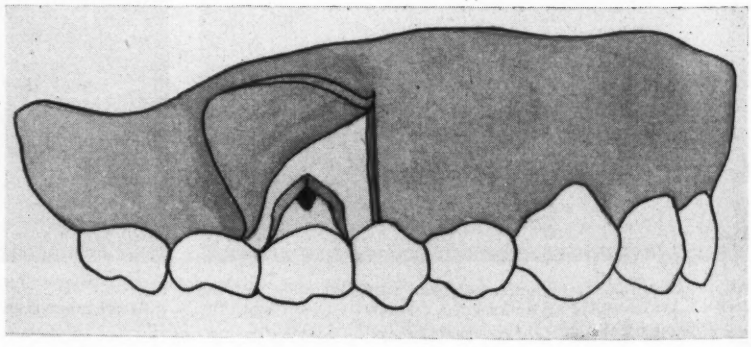


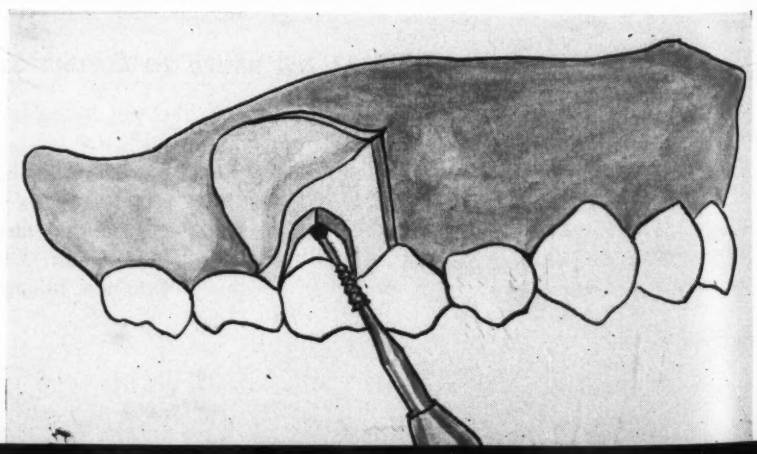
Fig. 1—Incision is made from buccal fold down to gingiva of tooth immediately anterior to that to be removed.





Figs. 2 and 3—Remove only enough bone to expose the area of bifurcation of the roots of the first molar.

Fig. 4—Cut through mesiobuccal root from the bifurcation to the mesial enamel-cemental junction with a crosscut fissure bur.



curs frequently is complete fracture of the tuberosity.

All of these difficulties may be obviated by the technique described here which has proved successful for the last several years in cases in which a difficult extraction was expected after careful study of the roentgenograms.

Technique

1. Make an incision from the buccal fold down to the gingiva of the tooth immediately anterior to the one to be removed (Fig. 1). Always make the incision far enough forward that the sutures will be placed over solid bone.
2. Holding the tissues back with a retractor, remove just enough bone over the bifurcation area to expose the bifurcation of the roots (Figs. 2 and 3).
3. Cut through the mesiobuccal root from the bifurcation to the mesial enamel-cemental junction with a surgical bur or a crosscut fissure bur (Fig. 4).
4. Remove the crown and the distobuccal and lingual roots with an upper molar forcep (Figs. 5 and 6). This portion of the tooth usually comes out easily.
5. Loosen the mesiobuccal root distally from its socket with an upper root elevator (Fig. 7).
6. Clean the socket carefully and suture the tissue flap over the solid bone (Fig. 8).

Advantages of Technique

1. Postoperative pain is minimized because there is no bone trauma or bruising of the tissues.
2. Danger of fracture of the root tip is eliminated.
3. Danger of fracture of the tuberosity is eliminated.
4. The floor of the maxillary sinus will not be injured if the technique is followed carefully.
5. Recovery is usually uneventful, and repair of the tissue and bone is rapid.

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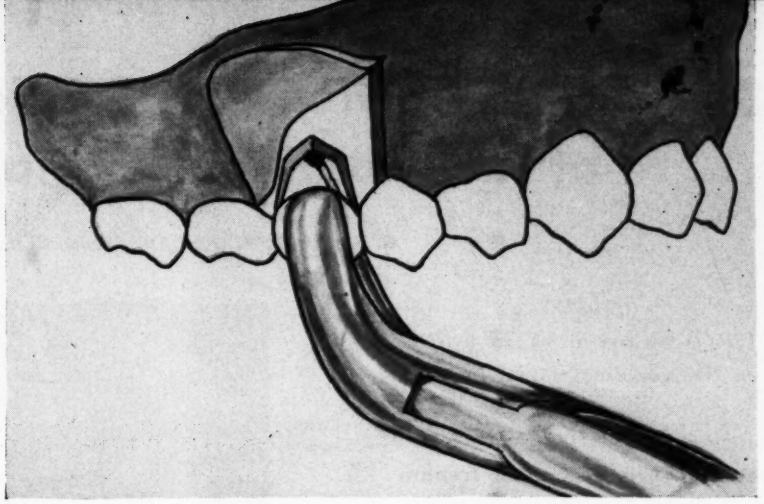
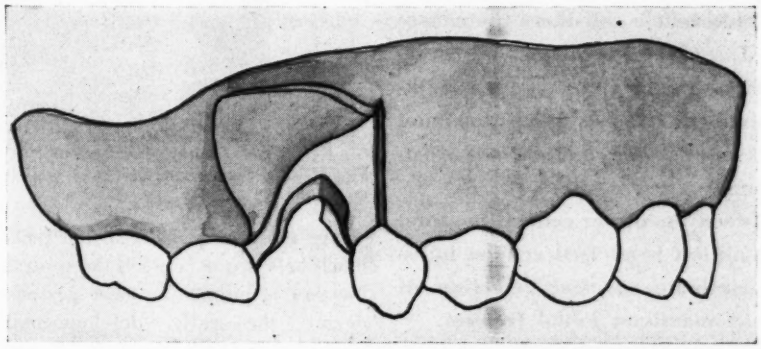




Figs. 5 and 6—Remove the crown and the distobuccal and lingual roots with an upper molar forcep.

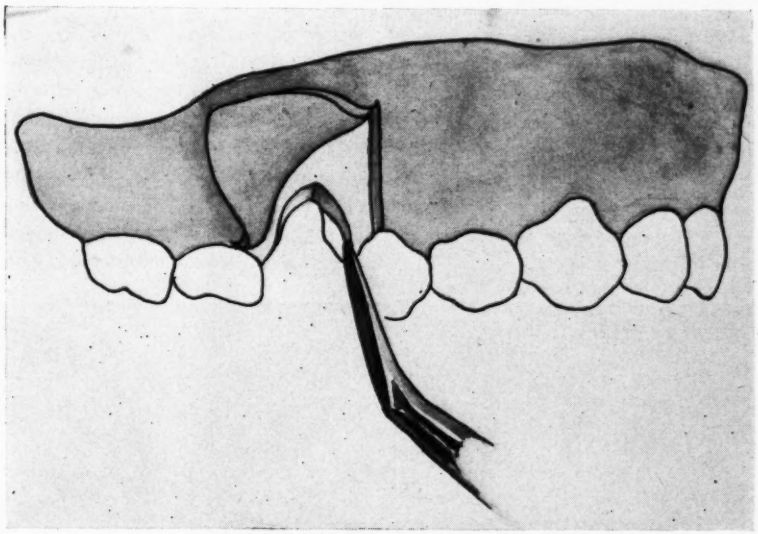
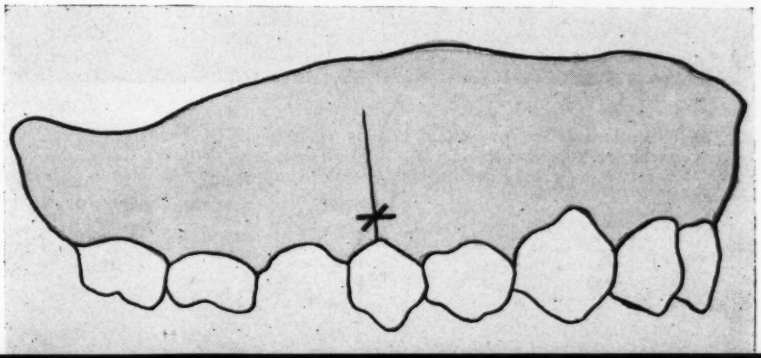


Fig. 7—Remove the mesiobuccal root by first loosening it distally.
Fig. 8—Clean the socket carefully and suture the tissue flap over the solid bone.



Contraindications for Surgical Resection of the Maxilliary Labial Frenum

(Conclusion)

B. F. DEWEL, D.D.S., Evanston, Illinois

DIGEST

This is the second of two articles on the maxillary labial frenum. The first discussed the developmental stages, anatomy, and normal variations of the frenum and the premaxillary structures. This article considers the causes of separated centrals, the occasional development of and diagnostic tests for abnormal frenums, and methods of treatment when a space persists between the upper central incisors. Caution is advised against indiscriminate surgical resection of the maxillary labial frenum.

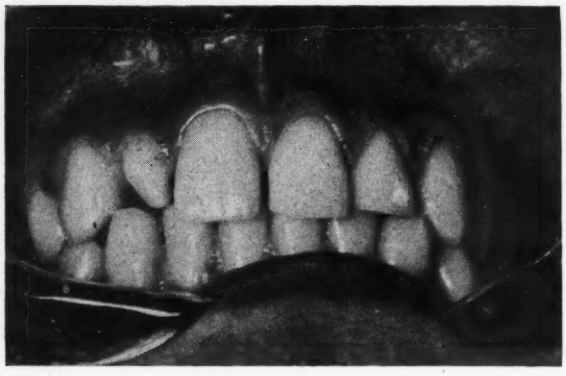


Fig. 12—Peg-shaped laterals fail to provide sufficient tooth structure to maintain centrals in contact.

Causes of Separated Centrals

No frenum should be considered abnormal until every conceivable cause of separated central incisors has been eliminated through careful analysis. Such a procedure will reveal first, that an enlarged frenum may be associated with but not the cause of a separation, and second, that a truly abnormal frenum occurs only in rare instances.

Age must be considered first inasmuch as a space between the central incisors is normal in most persons during the early developmental stages; moreover, spacing may persist between all four incisors until the eruption of the cuspids at about the age of twelve. Prior to this time the laterals may present a fan-shaped appearance with diverging crowns. As the cuspids erupt, the lateral roots tend to move into the area formerly occupied by the cuspid crowns. At certain periods the cuspids likewise may have a fan-shaped appearance. Like the laterals, with further development they tend to assume a more vertical position.

Herein lie the developmental forces that move into contact centrals that originally formed in crypts separated by the median suture. These forces, moreover, are great enough to produce pressure atrophy of the frenum if it failed to degenerate before the eruption of the permanent central incisors, provided other conditions are normal.

Obviously unerupted or peg-shaped lateral incisors do not contribute sufficient tooth material to fill the prescribed arch and to provide contact

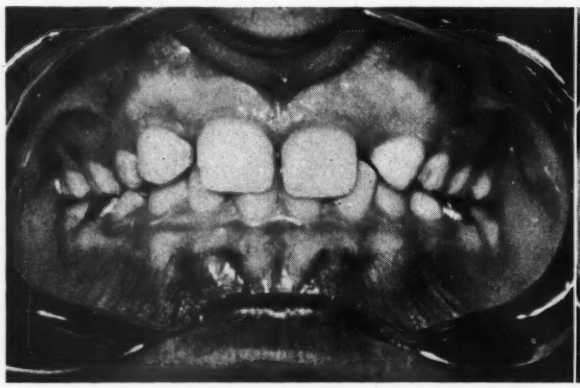


Fig. 13

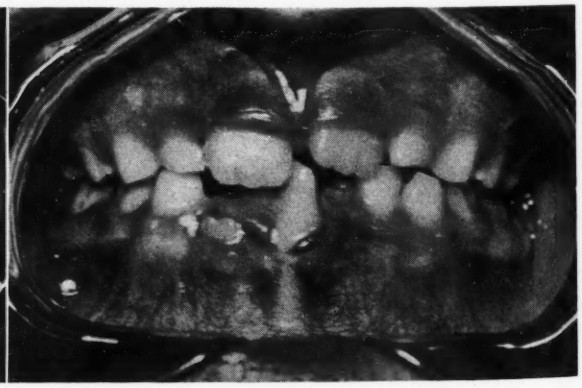


Fig. 14

Fig. 13—When laterals are congenitally missing, centrals can be maintained in contact only by artificial substitutes or by moving the upper posterior teeth forward into a Class II relationship with the lower teeth.
Fig. 14—Before committing a questionable frenum to surgery, an examination of occlusal relations may reveal the actual cause of the separation.

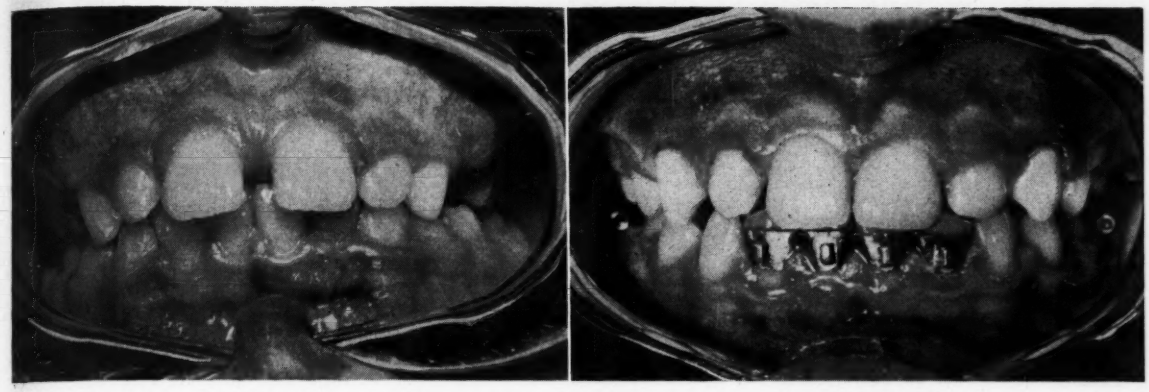


Fig. 15A

Fig. 15B

Fig. 15A—This frenum receded to a normal position. If, however, it had maintained a low attachment, it could not have been the cause of the separation since the spacing occurred anyway.
Fig. 15B—Correction of perverted axial inclination of the centrals in conjunction with other orthodontic treatment established normal contacting relationship.

to the distal surfaces of the central incisors (Fig. 12). Frequently excessive spacing of the centrals indicates congenitally missing lateral incisors (Fig. 13) or an unerupted midline supernumerary tooth. Routine roentgenographic examination, therefore, is indicated in all of these cases.

The simplest cause of spacing in which malocclusion is involved concerns crowded or rotated lower incisor teeth in which, when the jaws are closed, a labial malposition may place one of these teeth directly in the area where the upper centrals should come in contact (Fig. 14).

Effect of Changes in Arch Form

Any condition that requires the six anterior teeth to occupy an arch greater than they were designed to fill will result in the development of spaces between the incisors, since there is no proportionate increase in the mesiodistal dimensions of these

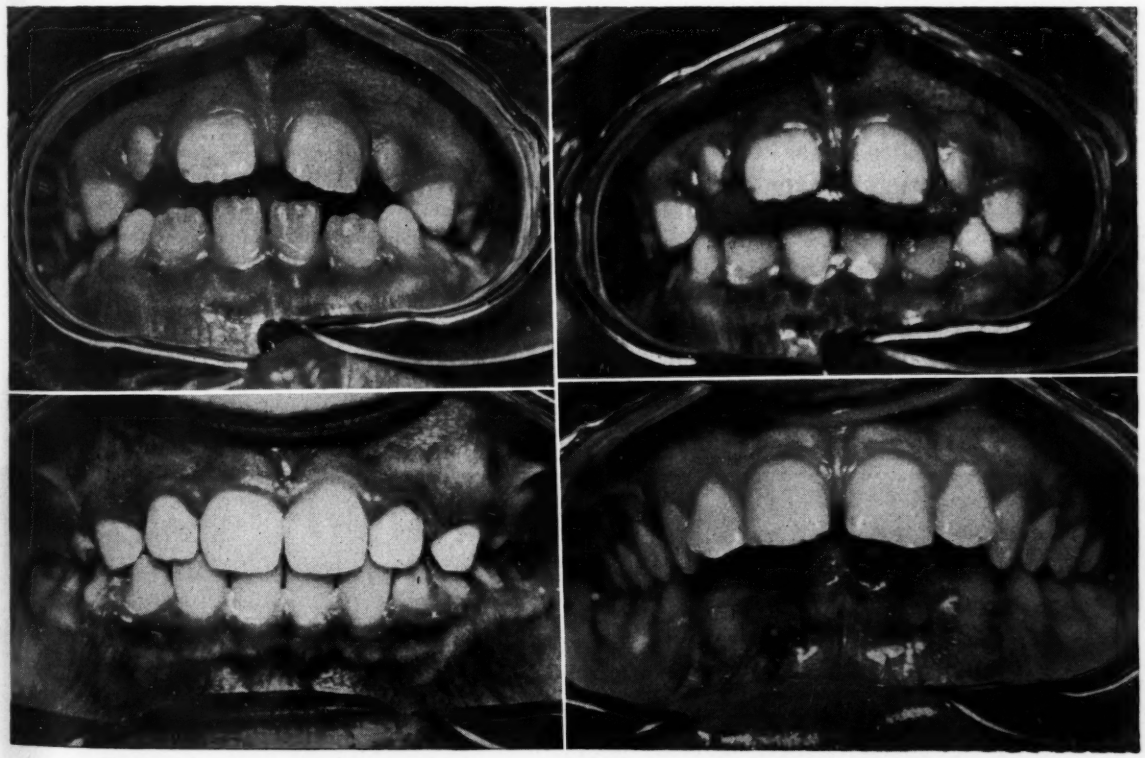


Fig. 16A (top) Fig. 16C (bottom) Fig. 16B (top) Fig. 17 (bottom)

Fig. 16A—Superficial diagnosis could easily result in unnecessary resection of this enlarged frenum.
Fig. 16B—The actual cause of the separated centrals is a persistent tongue-thrusting habit.
Fig. 16C—Orthodontic correction of habit and malocclusion resulted in normal contact and occlusal relations and atrophy of the frenum.
Fig. 17—Labially placed incisors in Class II malocclusion are required to expand into a larger arch than they were designed to occupy. Spacing results at some point. An enlarged frenum, if present, is the result, not the cause.

Fig. 18A Fig. 18B

Fig. 18A—Midline separations frequently can be traced to abnormal lip pressure.
Fig. 18B—Correction of the habit and associated malocclusion brings about normal contacting relations.

teeth to compensate for the increase in the size of the arch. Reference is made to the condition commonly known as prominent or protruding upper anterior teeth. The exception to this rule occurs when the posterior teeth also migrate forward to such an extent that contact relations are maintained in the anterior segment of the arch.

Although the resultant spaces may be confined to the area between the central incisors and are, therefore, easily attributed to a questionable frenum, they are in fact more often due to causes in no way related to that structure. The same midline separation may be observed frequently in similar cases in the presence of a normal highly attached frenum (Fig. 15). If an enlarged frenum is associated with the separation, it is possible that it simply failed to atrophy because it lacked the pressure stimulation ordinarily provided by centrals brought to contact by normal developmental forces.

Frequently this malformation is caused by an abnormal tongue position in which that organ, habitually or only during the act of swallowing, is thrust against the upper anterior teeth with such force and persistency that the incisors are carried labially into a larger arch than normal, losing contact in the process (Fig. 16). Certain tongue positions in related speech perversions may also be an etiologic factor. Thumb or finger pressure on the inside of the upper arch reacts in the same manner.

Certain classes of malocclusion likewise lead to a separation of the anterior teeth by causing an increase in the size of the arch. If a Class II Division I malocclusion is present, the upper anterior teeth are not only in labioversion but also present a labial inclination (Fig. 17). Normal muscular function is denied to teeth in this type of malocclusion. A characteristic short underdeveloped upper lip, and a lower lip that folds behind the upper incisor teeth, not only fail to provide the muscular pressure so necessary to the teeth if they are to assume their normal positions, but actually act to aggravate the irregularity by creating a larger cuspid-to-cuspid arc than is normal in the upper arch (Fig. 18).

A closed bite may produce a similar condition. In these cases the lower incisors close on the upper incisors at the cingulum, an area that presents a greater diameter labiolingually than at the incisal edges where the teeth come in contact in normal occlusion (Fig. 19).

The presence or absence of an enlarged frenum has nothing to do with separated central incisors in any of

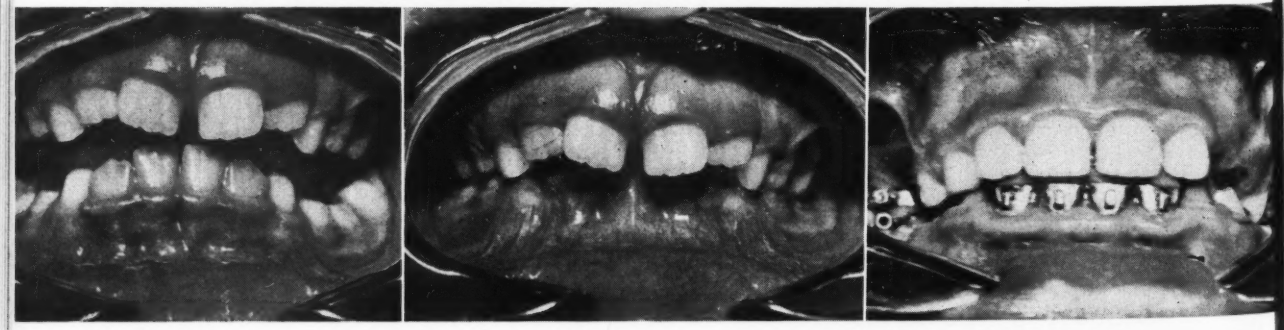


Fig. 19A Fig. 19B Fig. 19C

Fig. 19A—The thread-like frenum extending between these centrals is not the cause of this separation.
Fig. 19B—A closed bite prevents the centrals from achieving contacting relations.
Fig. 19C—Restoration of normal occlusion produces pressure atrophy of the frenum. Ultimately the centrals will be in contact.

these cases. If present, it is a result and not a cause.

Possible Development of Abnormal Frenums

Some observers apparently question the presence under any circumstances of an abnormal frenum that requires surgical removal.[1, 3, 4] It may be impossible, however, to state that such abnormal development cannot occur in certain rare instances. Continuity of superficial fibers between the frenum and the palatal papilla have been observed in histologic sections of newborn infants,[5] and there may on occasion be a similar condition in regard to the deeper fibrous layers. If so, it is possible that with such a rigid interlocking attachment, the downward and forward growth of the alveolar process simply causes increased downward growth of the frenum at the same rate and to the same extent as that occurring in the alveolar structures. Thus the frenum may be carried to an attachment far below what is considered normal and pleasing.

An indisputable abnormal frenum is markedly enlarged and retains most of the coarse and thickened characteristics of its early developmental stages. It presents a wide fan-shaped attachment to the upper lip, which tapers downward to a distinct sheet-like process that extends between the central incisors to be united with the palatal papilla (Fig. 20). Its fibers may take on the appearance of a cord, but not to the extent that it could be termed a fibrous ligament.

In passing through the interproximal space, the fibers of an abnormal frenum may cut through the transceptal fibers of the periodontal membrane.[6] These transceptal fibers are strong fiber bundles running from the cementum of one central to the cementum of the other. They pass across the crest of the interdental bone, and their function is to bind teeth together and to support the interproximal gum tissue. If the frenum is so abnormal that this interlocking of the transceptal fibers is prevented, its removal may be helpful in permitting these fibers of the periodontal membrane to bridge the gap. If, however, the frenum is not involved, surgery presents the danger of severing the normally attached and interlacing transceptal fibers which are so necessary to physiologic retention after contact relations between the centrals have been established either by natural or by orthodontic means.

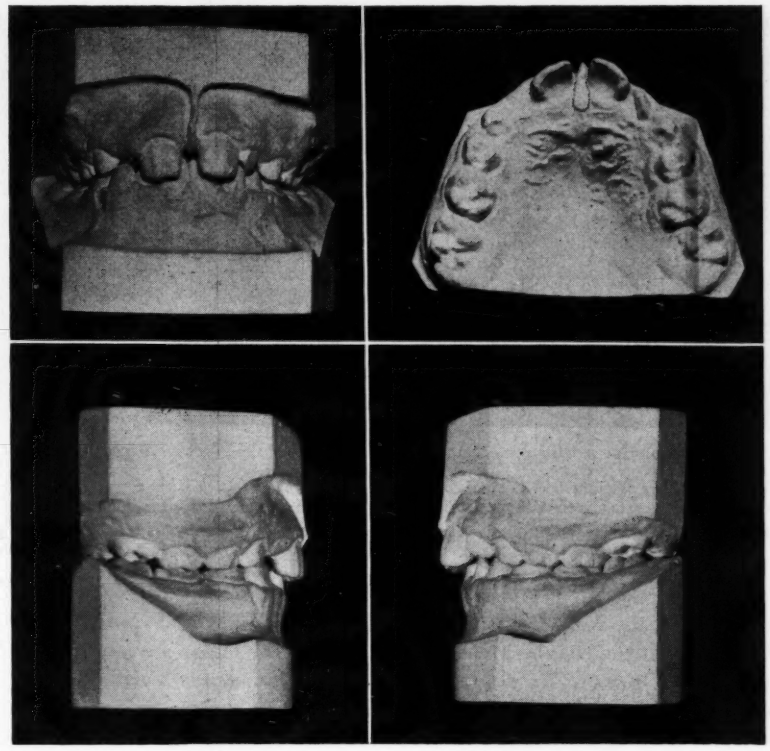


Fig. 20A (top) Fig. 20C (bottom) Fig. 20B (top) Fig. 20D (bottom)

Fig. 20A—This frenum failed to atrophy when an attempt was made to carry these centrals to contact.

Fig. 20B—Blanching and definite movement of the palatal papilla could be demonstrated by distending the upper lip.

Fig. 20C—The frenum extended as a broad sheet-like process between the centrals to an attachment with the palatal papilla.

Fig. 20D—An authentic abnormal frenum occurs so rarely that less than one in a decade will be observed in a private practice.

Diagnostic Tests for Abnormal Frenums

Intermittent pressure placed on the frenum by distending the upper lip permits observation of the extent and location of its alveolar attachment, and in addition reveals one of the most marked diagnostic symptoms of an abnormal frenum. If this tension produces blanching and a definite amount of movement not only of the tissues between the centrals but also of the palatal papilla, the frenum may be diagnosed as abnormal, provided that it can be distinctly traced as a separate structure, that sufficient time has elapsed for normal developmental forces to assert themselves, and that all other possible causes of the separation have been eliminated. No frenum should be reduced surgically before the eruption of the laterals, and rarely before the eruption of the cuspids; nor should such a diagnosis be made when the abnormality is first suspected. A period of observation to determine possible degenerative symptoms is always indicated.

[3]Howard, C. C.; Johnson, A. L.; and Mershon, J. V.: Individual responses to a questionnaire on the maxillary labial frenum, Internat. J. Ortho. & Dent. for Children, 19:450 (April) 1933.

[4]Taylor, J. E.: Clinical Observations Relating to the Normal and Abnormal Frenum Labii Superioris, Am. J. Ortho. & Oral Surg., 25:646 (July) 1939.

[5]Noyes, H. J.: Anatomy of the Frenum Labii in New Born Infants, Angle Ortho., 5:3 (January) 1935.

[6]Strang, R. H. W.: Text-Book of Orthodontia, ed. 2, Philadelphia, Lea & Febiger, 1943, pages 134 and 307.

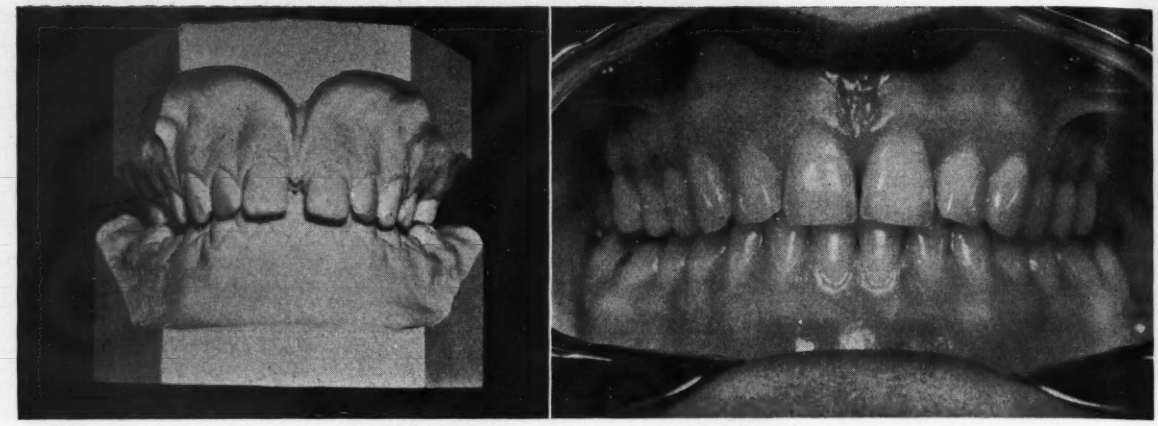


Fig. 21A

Fig. 21B

Fig. 21A—This frenum had been resected a year or more prior to orthodontic consultation. Evidence is provided that spaces do not close simply because frenums have been removed. It did not do so in this case.

Fig. 21B—Restoration of normal occlusion released the forces necessary to produce contacting centrals. Note that the interproximal gum septum fails to project incisally between the centrals. The operation probably was too severe.

Surgical resection provides no assurance that the space will close just because the frenum has been removed (Fig. 21). It must be determined whether the frenum is actually the cause of the separation, or whether natural developmental forces simply have failed to exert sufficient mesial pressure on the centrals to close the space in a normal manner. Because it is characteristic of any structure to guard its rights of position and existence, it is likely that the frenum has a constant tendency to exert passive resistance to the forces attempting to cause its elimination. Its success is determined for the most part by other factors.

If, for example, normal arch form is lacking, the wedging action of the laterals and cuspids may not provide normal pressure on the separated central incisors. The central incisors are larger teeth than the laterals and therefore present greater resistance to displacement. In early developmental stages the laterals are located slightly to the lingual of the centrals and cuspids, and they may erupt in that position in an underdeveloped arch. Or, because of their size, they may readily be deflected in some other direction if arch form is otherwise abnormal.

As the cuspids erupt at a much later developmental period, other teeth, if in malocclusion, may cause them to be displaced labially or lingually. In normal development in well formed arches, however, these abnormal conditions are not present. If malocclusion is associated with a separation of the central incisors, it should be treated as such. Restoration of normal occlusion ordinarily will release whatever developmental forces are necessary to provide pressure atrophy of the frenum and effect closure of the space.

Types of Treatment

Two methods of treatment are available for the rare but questionable abnormal frenum. One, of course, is immediate surgical resection, but radical removal is seldom indicated. It should be undertaken only as a local correction, and should not extend into the tissues of the lip nor into the interdental bone. A small triangular section beginning at a point 3 mm. or 4 mm. above the central incisors and extending downward to include the palatal papilla is the only part that does the damage and is, therefore, the only part that should be removed.[7]

The other, and perhaps the better method, is to attempt to close the space by orthodontic means first (Fig. 22). If tissue hypertrophy instead of pressure atrophy results, then, provided the space has not been closed too rapidly, convincing evidence is finally obtained for a diagnosis of a truly abnormal frenum. With orthodontic appliances already in place, a mechanism is present to close the space quickly before the formation of postoperative scar tissue. Only then should a final decision be made in regard to surgical resection.

[7]Dewey, Martin; and Anderson, G. M.: Practical Orthodontia, ed. 6, St. Louis, C. V. Mosby Company, 1942, page 465.

Summary

1. The frenum is rarely the cause of separated central incisors. If enlarged, it is more likely to be the result of the separation rather than the cause.

2. It is normal for central incisors to erupt with a space between them. In their development they are separated by the median suture of the maxillary bones.

3. If an enlarged frenum is associated with separated centrals, it normally degenerates from pressure atrophy provided by the subsequent eruption of the laterals and cuspids. These teeth supply the additional dental units necessary to produce adequate contact relationship in the anterior segment of the arch.

4. The ultimate form and position of the frenum are determined by osseous and dental structures which surpass or excel it in downward and forward growth and development.

5. Abnormal tongue pressure, lip habits, missing or peg-shaped laterals, and certain forms of malocclu-

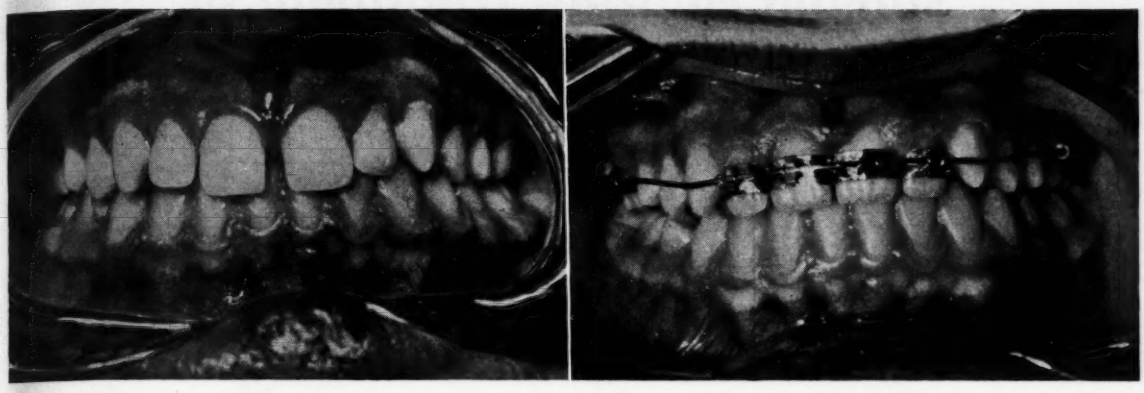


Fig. 22A

Fig. 22B

Fig. 22A—An enlarged frenum may cause a perversion of the axial inclination of one or both centrals. An appliance should be selected that will move teeth into a position of normal inclination.

Fig. 22B—Should the frenum hypertrophy and surgery be necessary, appliances are already in place to close the space before the formation of scar tissue. It was not necessary to operate on this frenum.

sion are among the causes of separated central incisors. As they are corrected, the centrals concurrently move into contact and produce pressure atrophy of the frenum if it has maintained a low alveolar attachment.

6. An authentic abnormal frenum occurs only in rare instances. It is markedly enlarged and retains most of the coarse and thickened characteristics of its early developmental stages.

7. If the cause of the separation lies elsewhere, surgery provides no assurance that the centrals will move together simply because the frenum has been resected.

8. In doubtful cases, orthodontic appliances should be placed to close the space in part before surgery is undertaken. Usually the space can be closed completely without the aid of surgical resection. If, however, surgery is necessary, appliances are already in place to move the centrals into contact before the formation of postoperative scar tissue.

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Sodium Fluoride Treatment of Hypersensitive Teeth

LIEUTENANT (jg) FRANCIS M. WELLS (DC), U.S.N.R., Great Lakes, Illinois

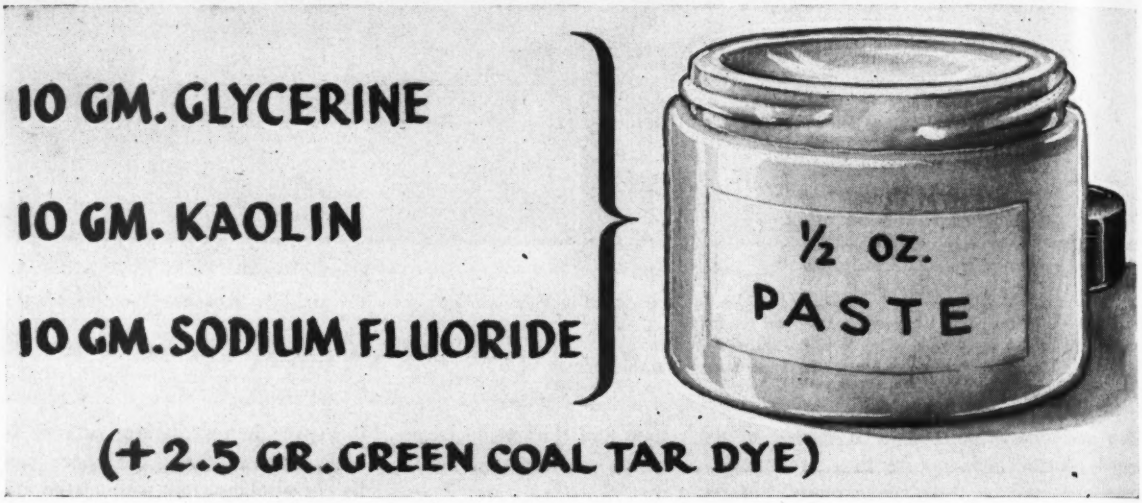

Fig. 1—33 per cent sodium fluoride paste.

THE USE OF 33 per cent sodium fluoride paste has proved effective in the treatment of hypersensitive teeth. The paste is odorless, nonirritating, and nontoxic to tissues. It reacts with electrifying rapidity, but does not produce discoloration of the teeth. The most tenable theory of the action of this paste is that sodium fluoride reacts with calcium phosphate to form insoluble calcium fluoride which seals the dentine tubules.

One-half ounce of the paste consists of approximately the following: (1) 10 grams glycerine; (2) 10 grams kaolin; and (3) 10 grams sodium fluoride (Fig. 1). Green coal tar dye (2.5 grains) may be added to make the paste more visible against tooth surfaces during treatment.

Uses of Paste

The following hypersensitive areas are indicated for treatment:

1. Erosion at the labiogingival margin of the cuspids caused by toothbrush trauma (Fig. 2A).

2. Fractured incisal edges or angles of permanent incisors in young children (Fig. 2B).

3. Erosion caused by action of a clasp on the upper cuspids (Fig. 2C).

4. Erosion of lower bicuspids and molars by clasp action of a partial lower denture (Fig. 2D).

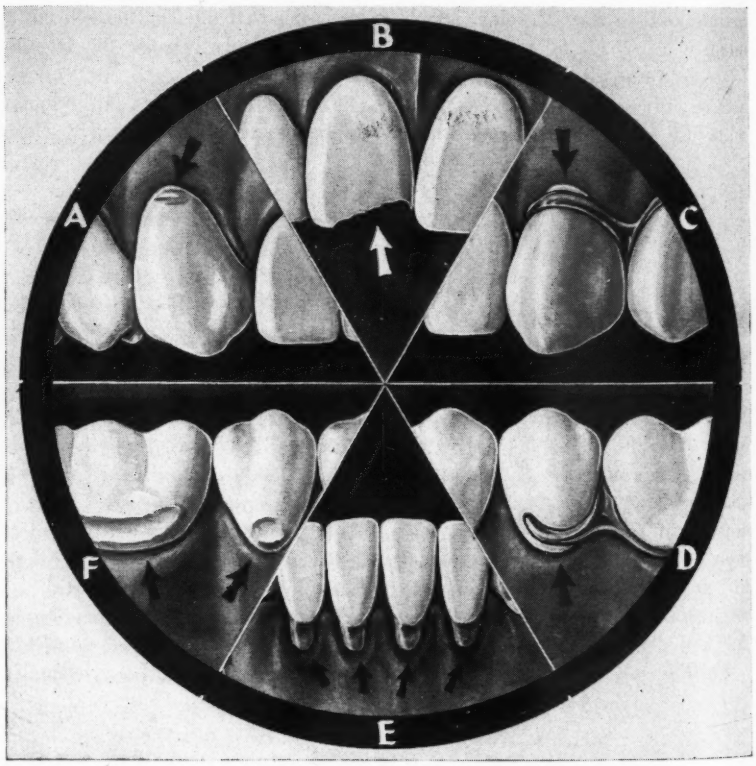

Fig. 2—A, Erosion at labiogingival margin of cuspids caused by toothbrush trauma; B, fractured incisal edge of permanent incisor; C, erosion on upper cuspid caused by clasp action; D, erosion on lower bicuspids and molars caused by clasp action; E, recession of gums caused by periodontal disease; F, decalcified gingival and subgingival areas where cavity preparation is difficult.

5. Labiogingival areas of lower anterior teeth in mouths affected by

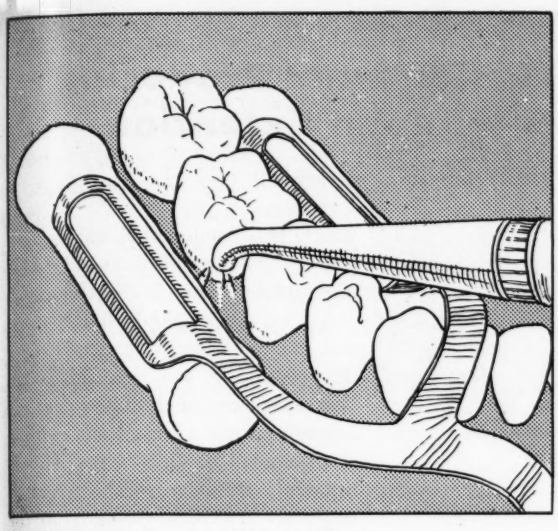

Fig. 3—Dry sensitive area with warm air.

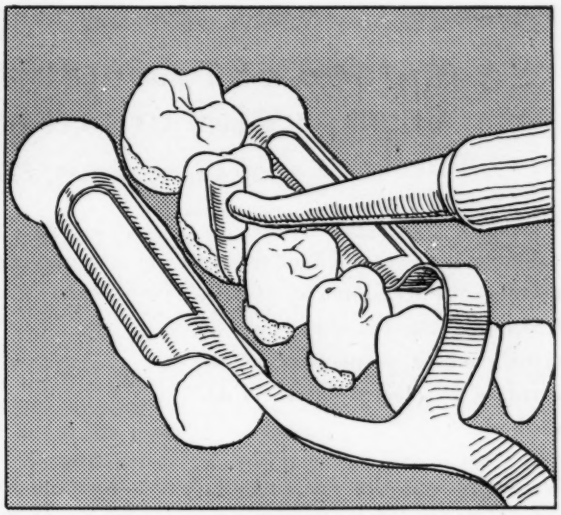

Fig. 4—Burnish sodium fluoride paste into sensitive area with porte-polisher and wooden point.

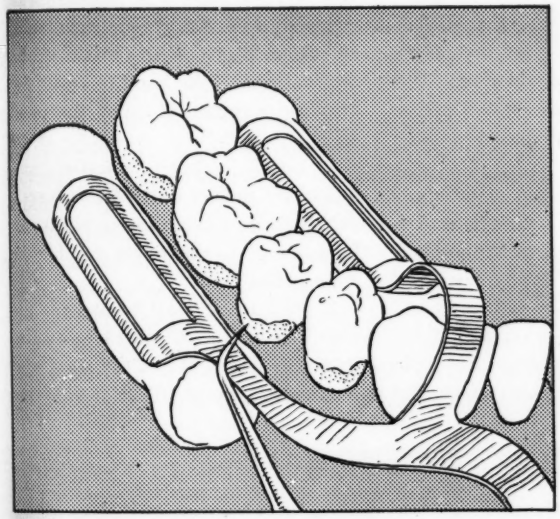

Fig. 5—Explore tooth surface to be sure all sensitive spots have been treated.

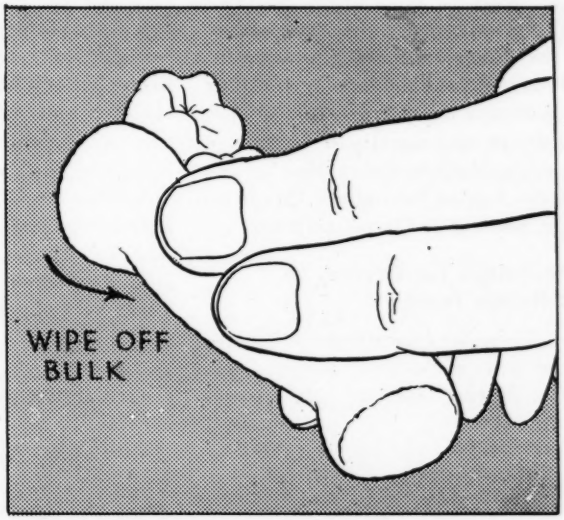

Fig. 6—Wipe off bulk of paste with cotton roll when removing it.

periodontal disease and recession (Fig. 2E).

6. Hard, concave, and decalcified gingival and subgingival areas of the lower bicuspids and molars where cavity preparation is difficult and often impracticable (Fig. 2F).

7. Sodium fluoride paste likewise may be used to obtund carious cervical areas sufficiently to permit almost painless cavity preparation.

Method of Treatment

Treatment of all areas is accomplished by the following procedure:

1. Smooth any rough, decalcified areas on molars with an amalgam file or scaler before instituting treatment.

2. Block the area with cotton rolls, and dry with *warm air* (Fig. 3).

(*Continued on page* 320)

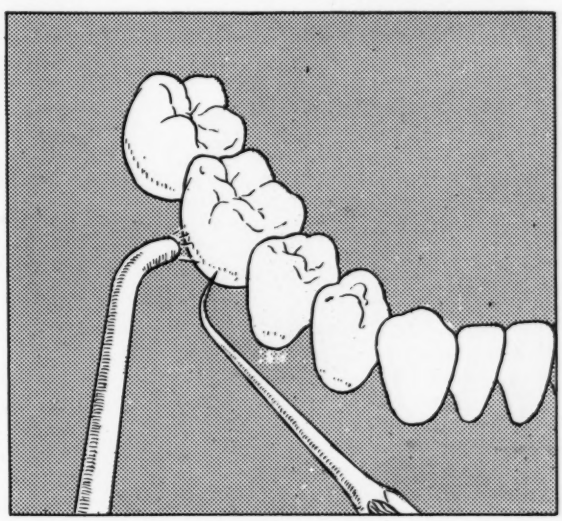

Fig. 7—Examine tooth surface with explorer and air to determine efficacy of treatment.

A Method of Taking Impressions and Producing Copper Dies of Cavities with Pin Retention

ROLLAND E. SHIRLEY, D.D.S., Los Angeles, California

DIGEST

A method is suggested for taking accurate impressions of pin retention cavities for either gold or acrylic inlays. A process of die forming by electroplating is described.

WITH THE increasing interest in the use of acrylic for inlays, either in combination with gold or by itself, pin retention gives added assurance of the permanency of the restoration. The indirect method of taking the impression and the forming of copper dies seems the method of choice. Pin holes as an integral part of the copper die simplify the problem of any type of inlay restoration. This is especially true in Class V cavities.

Technique for Cavities of Anterior Teeth

Taking the Impression—1. Prepare the cavity in the usual manner.

2. Having selected the points where pin retention is desired, drill the holes with a drill prepared as follows:

a) Flatten one side of a number 699 or number 700 crosscut fissure bur by holding it against a Joe Dandy disc in the handpiece. Turn the bur over and flatten the other side in the same manner.

b) Form a right and left bevel on the tip of the bur. Smooth the bevel by honing it to a keen edge on an oil stone.

3. After the holes have been drilled, smooth the walls with a tapering fissure bur or a fine jeweler's file. The tapering walls of the holes permit easy withdrawal of the impression without distortion.

4. Place the following materials in a double boiler: (1) 40 grams Aluwax; (2) 20 grams S. S. White black inlay wax, number 5; (3) 1 stick of Kerr's hard blue inlay wax; and (4) 1/3 stick of utility wax. Melt these over a low flame, and pour into a tin plate. Cut the wax into convenient sticks. This combination wax is light blue in color, and is called "blue electroplating wax" in this technique.

5. Fit a copper band, slightly oversize, around the tooth to allow for a thin coating of wax over the metal. Warm the band slightly and coat the inside near the cervical end with a small amount of sticky wax. (This is essential inasmuch as the graphite wax does not adhere readily to the metal.)

6. Fill the band with graphite wax warmed over the flame. Melt sufficient blue electroplating wax over the cervical end of the band to cover the graphite wax entirely. Lay the band aside.

7. Lubricate the preparation, pin holes, and surface of the tooth. Kerr's debubblizer makes an excellent lubricant both in the mouth and for the copper dies.

8. Pick up a small amount of the blue wax with small pliers and warm it over a flame. When the wax is at the flowing stage, drop it into the

Fig. 1

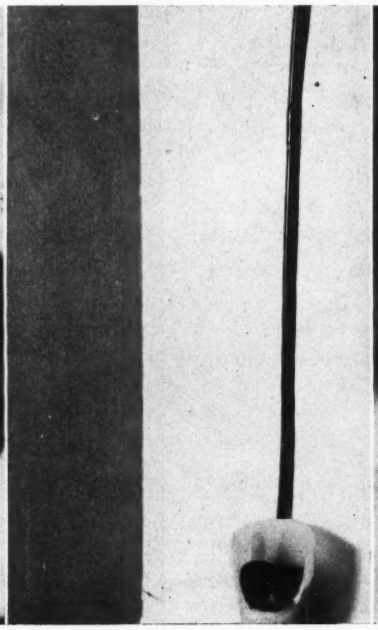

Fig. 2

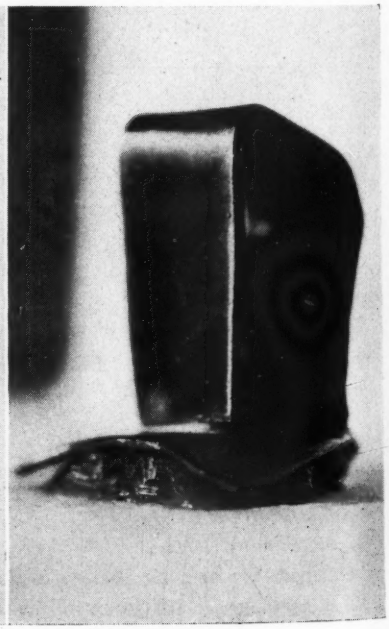

Fig. 3

Fig. 1—Pin ledge attachment. Fig. 2—Band ready for plating; wax cut away to show impression. Fig. 3—Copper tray with handle.

cavity, using enough to cover the walls, margins, and pin holes. Plunge a hot tapering instrument, such as a discarded number 17 explorer which has been ground to fit the holes loosely, through the wax over the pin holes, carrying the wax to the bottom of the holes. Pick up another small amount of sticky wax with warmed pliers, and drop it over the location of the pin holes. Again warm the explorer point and carry it through the sticky wax into the holes. This will reinforce the blue wax that is in itself too soft to be withdrawn safely from the pin holes.

9. Warm the band quickly by passing it through the flame, and carry to place on the tooth. A little experience will demonstrate the proper consistency of the wax in the band to complete the impression. The blue wax in the tooth and in the band are readily united, the blue wax remaining slightly plastic at mouth temperature.

10. Chill thoroughly and remove in a line with the long axis of the tooth. The impression may be kept in water of room temperature until ready for the next step (Fig. 1).

Preparing the Impression for Plating—1. Blow all moisture from the surface of the impression until it is completely dry.

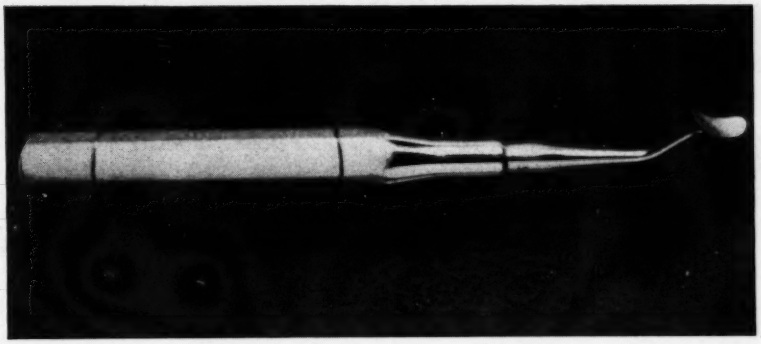

Fig. 4—Tracy tray with removable handle. Slot on reverse side holds handle or cathode wire.

2. Coat the impression with a minimum of sweet (not synthetic) almond oil, using a fine camel's hair brush.

3. Apply a conductorizing bronzing powder with a larger camel's hair brush that is used only for this purpose. Burnish to a high gloss with this brush, applying several coats of powder to all surfaces of the impression.

4. Wrap the band with a thin gauge wax, extending the wax to ¼ inch or ½ inch above the edge of the band to form a base for the die that is poured in stone when plating is completed. Cover the exposed end of the band with additional wax.

5. Cut a narrow slit in the wax, covering the band on its longest side, and drop a small amount of sticky wax near the closed end of the band or at the end of the slit in the wax.

6. Prepare a piece of 16 gauge copper enameled wire, cutting it to a length suitable for the plating tank. Scrape the wire at the end intended to fit the cathode contact clamps. From the other end of the wire, scrape away the "enamel" from one side only, and dress the wire down to a flat surface with a stone to make good contact with the band. Warm the wire slightly and press to place against the bare portion of the band, utilizing a drop of sticky wax to hold the wire at that point. Drop more sticky wax

Fig. 5

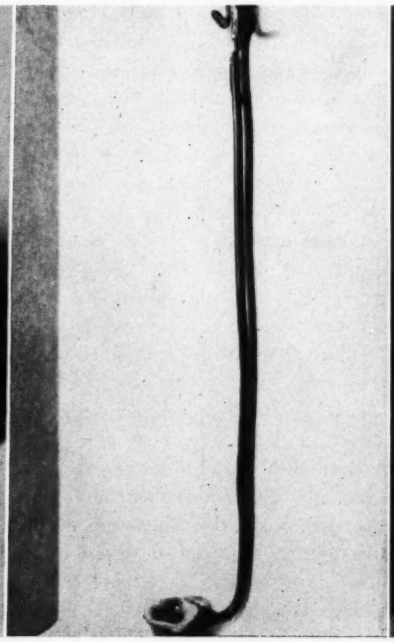

Fig. 6

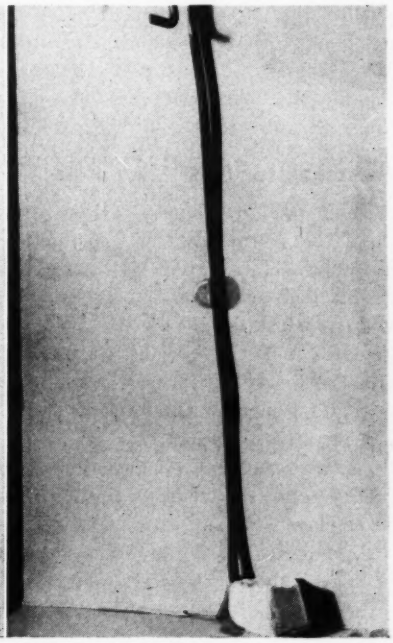

Fig. 7

Fig. 5—Completed impression in Tracy tray. Fig. 6—Cathode wire attached to tray. Fig. 7—Tray shown in Fig. 6 invested in plaster.

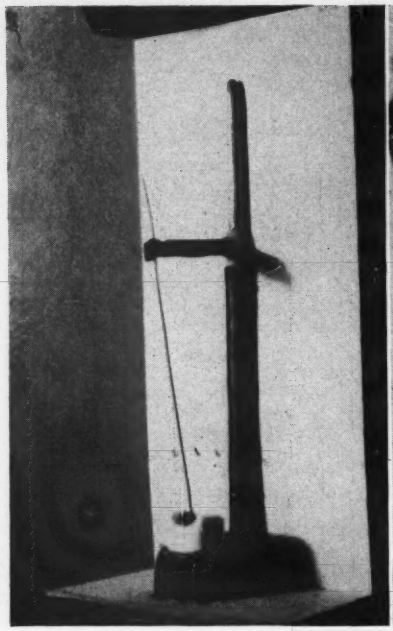

Fig. 8—Assembly showing cathode wire attached directly to the invested impression.

Fig. 9—Wax impression.

Fig. 10—Wax cone impression wrapped in wax.

over the wire and the band to cover all exposed surfaces (Fig. 2).

7. Drop a small amount of 50 per cent alcohol and water into the impression to reduce surface tension. Blow out the excess and place the band in the plating solution. One volt to two volts with 10 milliamperes current for a few hours will give a good plating of copper depending on the type of plating equipment used. When the plating is finished, pour the die stone to form the base of the die.

Technique for Class V Cavities

Taking the Impression—1. Prepare the cavity in the usual manner, and if additional retention is desired drill a hole at the mesial extremity and another at the distal extremity of the cavity with the specially prepared crosscut fissure bur. One-half millimeter to 1 mm. is usually sufficient for retention. Preparations of less depth are possible if pin retention is used. One pin of sufficient length can be employed in many cases.

2. Impressions of the cavity can be taken with either small metal trays or McBean's hard graphite cones. The cone method is best employed in small cavities involving the six anterior teeth and sometimes in the bicuspids if access is easy. Metal trays can be used in all cavities. These trays can be formed at the chair from stiff sheet copper in such a manner as to leave a small handle turned up for a finger grasp (Fig. 3).

I have found the tray designed by Doctor W. D. Tracy of New York (Fig. 4) satisfactory for taking impressions. This tray is provided with a removable handle that fits into a slot on the reverse side. The slot can be used for attaching a cathode wire to the tray if desired.

a) Select a Tracy tray of proper size for the location of the cavity. Coat the impression side of the tray lightly with sticky wax. Drop sufficient blue wax with small pliers over the sticky wax and build up a mound to more than fill the cavity. Lay the tray aside.

b) Isolate the tooth, lubricate the cavity, and carry enough blue wax with small pliers to the cavity to flow over the floor, margins, and pin holes. Plunge the warm explorer through the wax, add the sticky wax, and again use the warm explorer.

c) Heat the points of the pliers slightly and sear the surface of the wax in the tray so that the two waxes will unite. Carry to place, chill thoroughly, and remove with a straight pull. Fig. 5 shows the completed tray impression.

Preparing the Impression for Plating—Before removing the tray from the handle, coat the reverse side with utility wax to prevent the plating solution from reaching the metal of the tray. Two methods of attaching the cathode wire to the impression can be used.

First Method: 1. Prepare a piece of 20 gauge enameled copper wire by scraping one end clean for a distance of about ½ inch to fit the cathode clamp of the plater. Scrape the enamel from the wire at the other end for a distance of ½ inch; bend this end to a right angle.

2. Drop sticky wax at the angle of the bend and slip the wire through the slot of the tray up to the sticky wax which should be warm enough to hold the wire in tight contact with the slot or the bare surface of the tray (Fig. 6). More sticky wax can be added if necessary.

3. Mix a small amount of plaster, slightly stiff, and holding the tray by the wire embed it in the plaster (Fig. 7) Allow the plaster to flow up around the margin of the tray to form

a rim of plaster 1 mm. or 2 mm. in depth. Support the wire in an upright position until the plaster has set.

4. Apply almond oil, conductorizing powder, and alcohol solution, and place in the tank. The 20 gauge wire carries enough current to warrant the voltage and the amperage being reduced to the smallest amount, ½ volt to 1 volt being the maximum. The milliamperage should register 5 to 10. Too much current will result in a "burned" deposit of brownish, flaky appearance, in contrast to the bright copper color. When the impression is plated for several hours, the die stone is poured for the base of the die.

Second Method: In this method the cathode wire is attached directly to the invested impression. Mr. Wilbur John of Los Angeles has suggested a simple holder that can be made in the office:

1. A 6 inch length of small brass rod of a diameter to fit the cathode clamp of the plating machine is threaded at one end to fit an ordinary brass nut.

2. Cut a piece of brass plate to about ½ inch to ¾ inch in diameter. Drill a hole at the outer edge of the circumference to fit the brass rod.

3. Screw a brass nut on the end of the threaded part of the rod, slip the brass plate on the rod, and use another nut to tighten the plate against the first nut. This plate forms a table or a base upon which the invested impression is to be placed.

4. Solder a small clamp 2 inches from the other end of the rod. Center the clamp over the table. Before assembling the table, slip a piece of gum-rubber tubing over the rod reaching from the clamp to the threaded portion of the rod.

5. After assembling the table, dip it into melted utility wax, sealing the juncture of the rubber tubing and the metal. Build up the wax on the upper side of the table so that the invested impression can be embedded in the center and held firmly in place.

6. After the impression has been bronzed and placed in position on the table, cut a piece of 24 gauge enameled wire that will reach from the impression to slightly above the clamp. Scrape away all the enamel on the wire opposite the clamp and ½ mm. of enamel from the other end. Warm this end slightly and embed it in the exact center of the impression down to the edge of the enamel on the wire. Clamp the other end of the wire in position.

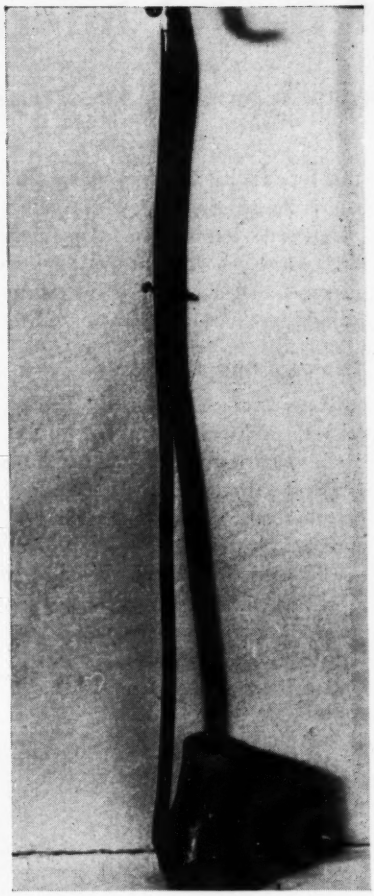

Fig. 11—Wax cone with cathode wire attached to base.

7. Re-touch the wax around the end of the wire with the bronzing powder. The assembly is now ready for the plating tank (Fig. 8).

If the impression is small and there are 4 mm. or 5 mm. of tooth surface showing away from the margin of the cavity, place a drop of the blue electroplating wax on the wax of the tray at a point farthest from the margin and embed the wire in this drop of wax. When the plating is completed, the wire is snipped from the die, and stone is poured for the base.

Wax Cone Impression Technique

1. Thoroughly chill a cone of McBean's hard conductorized wax.

2. Drop enough of the blue wax with small pliers over the tip of the cone to approximate the size of the cavity. If the cavity is larger than the tip of the cone, cut off a small portion of the cone inasmuch as the blue wax must be supported by the cone which acts as a plunger for the softer blue wax.

3. After the retention holes and the cavity margins have been covered and filled, sear the tip of the blue wax on the cone, carry to place, and hold with light pressure (Fig. 9). Chill and remove.

4. If retention pins are not necessary, the blue wax may be eliminated and the tip of the cone warmed by dipping in hot water. Almond oil is not necessary before applying the bronzing powder. Wash graphite impressions with alcohol before applying conducting powder.

Preparing Cone Impression for Plating

1. Dry the impression, and apply oil and bronzing powder.

2. Warm a piece of thin gauge wax, and have it extend 3 mm. to 4 mm. above the cavity margins. Wrap the cone impression snugly in the wax (Fig. 10). If the sheet wax is properly warmed, the margins will not be injured; there should be at least a millimeter of margin around the circumference of the impression.

3. Remove all the enamel from one end of a length of 16 gauge wire for a distance of at least ½ inch. Bend this bared wire to a right angle, heat, and plunge through the base of the cone (Fig. 11).

4. Add wax to entirely cover the exposed graphite of the base of the cone, or copper will be deposited at this point. A medium voltage and amperage will give excellent results in a few hours. In any electroplating process better results will be obtained if the current is kept low for the first 10 minutes to 15 minutes and is then stepped up to the final current desired.

6381 *Hollywood Boulevard.*

Oral Tumors of Dental Interest—The Epulis*

GEORGE A. MORGAN, D.D.S., Toronto

THE EPULIS IS probably the most common tumor observed in the mouth. These tumors generally arise from subepithelial connective tissue of the alveolar border or from the sockets of extracted teeth. The term "epulis" does not indicate any one pathologic entity. The epulis is usually a fibrous tissue hyperplasia, and is most frequently characterized by a preponderance of granulation tissue (granulomas). Another tumor of this type is that in which fibrous tissue is the chief characteristic (fibromas). The least common epulis is that which is distinguished by the presence of giant cells (giant cell tumors).

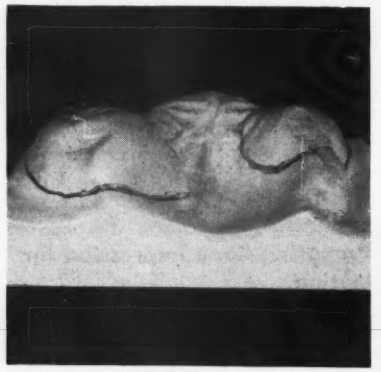

Fig. 1—Model illustrating bilateral maxillary osteofibromas.

Fig. 2—Roentgenogram of left maxillary bicuspid and molar region illustrated in Fig. 1 shows hypertrophied bone and fibrous tissue.

*This is the first in a series of three articles on oral tumors by Doctor Morgan.

Etiology and Diagnosis

The actual exciting cause leading to cell proliferation is not known. Many contributing causes, such as gingival irritation, recurring trauma, calculus, carious teeth, retained roots, and faulty restorations, may or may not be aggravated by infection and should be considered possible factors.

Granuloma—The common granulomatous epulis is irregular in size and at times is ulcerated in appearance. It is generally vascular and may hemorrhage profusely on operation. One must be careful to differentiate between this type of tumor and the proliferative gingivitis of pregnancy. In most instances it is first observed by the dentist at an early stage when complete removal under local anesthesia is not difficult provided hemorrhage is controlled.

Fibroma—Fibromas which are of interest to the dental practitioner may be of three types:

1. The pure fibroma, which is composed chiefly of fibrous material, is reasonably easy to diagnose clinically inasmuch as it frequently causes malposition of the adjacent teeth by pressure.

Fig. 3—Clinical appearance of cystic fibroma.

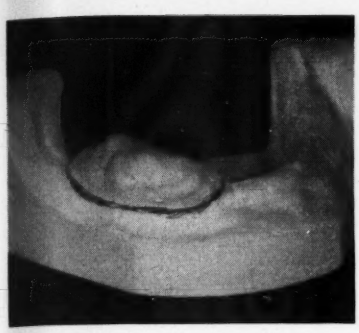

Fig. 4—Model demonstrating extent and size of cystic fibroma shown in Fig. 3.

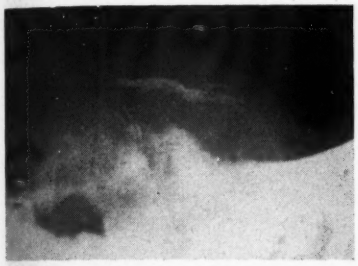

Fig. 5—Roentgenogram demonstrating conglomeration of bone and fibrous and cystic materials as observed clinically in Fig. 3.

2. The osteofibroma, as the name suggests, is a combination of hypertrophied bone and fibrous material (Figs. 1 and 2).

3. The cystic fibroma combines bone, fibrous material, and cystic material (Figs. 3, 4, and 5).

Giant Cell Tumor—The most commonly observed giant cell tumor is one which produces a painless swelling of either the maxilla or the mandible, more often on the external surface than on the internal surface. The neoplasm may be pedunculated but usually is attached to the bone on a wide base. It is fairly well circumscribed and of firm consistency, and shows early a characteristic bluish color. The interdental papillae may be enlarged, and the teeth often are pressed far apart by the tumor.

Benign giant cell tumors may occur at any age, but the most common age period is between twenty years to forty years. The frequent involvement of the jaws may be the result of the common occurrence of resorptive processes caused by physiologic and pathologic conditions. Figs. 6, 7, and 8 illustrate a giant cell tumor in the region of the lower left first and second molars. The patient, a young adult man, gave a history of extraction of the carious mandibular left first molar one year previous to presentation. Fig. 9 illustrates a large giant cell tumor in the anterior mandibular region. This patient, also a young adult man, gave a history of recent extraction.

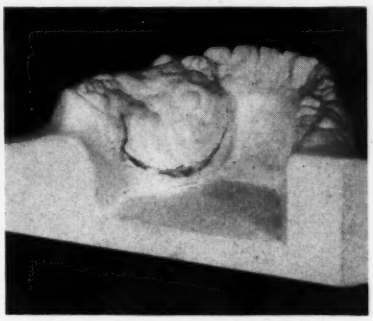

Fig. 7—Model showing lingual extent of tumor shown in Fig. 6.

Fig. 8—Roentgenogram of tumor illustrated in Fig. 6 shows extent of bone proliferation.

Fig. 6—Giant cell tumor in lower left first and second molar region on presentation.

Comment

Early recognition of benign oral tumors by the dentist is of increasing importance inasmuch as, in most instances, they are observed first by the dentist.

Removal is not difficult in most cases, and healing is usually rapid. Local anesthesia is the anesthesia of choice because of hemorrhage control. When general anesthesia is used, it is suggested that the area adjacent to the tumor be infiltrated with a local anesthetic to assure the operation a comparatively dry field. It is suggested that all tumor tissue that is

Fig. 9—Giant cell tumor, lower anterior region.

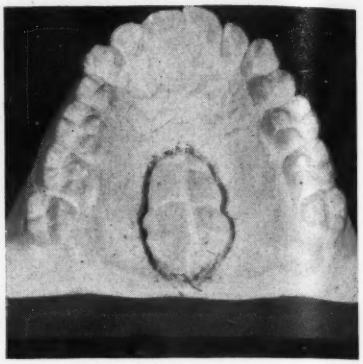

Fig. 10—Model illustrating torus palatinus.

Fig. 11—Model illustrating simple epulis between maxillary central and lateral incisors.

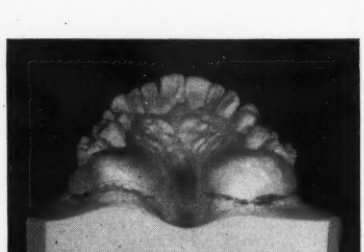

Fig. 12—Model illustrating hypertrophied tissue growth on tuberosities of maxilla.

removed be preserved in 10 per cent formalin and sent for pathologic study.

The retention or removal of teeth adjacent to all types of benign oral tumors is determined either by the size and extent of proliferation of the tumor and the amount of alveolar bone loss as determined by roentgenographic examination, or by the existing condition observed at the time of operation.

170 *Saint George Street.*

Sodium Fluoride Treatment of Hypersensitive Teeth

(*Continued from page* 313)

3. Burnish a small amount of 33 per cent sodium fluoride paste into the sensitive area with a porte-polisher and *wooden* point for 2 minutes (Fig. 4).

4. Explore the tooth surface to be sure all sensitive spots have been treated effectively (Fig. 5).

5. Burnish the paste over the area for a few more minutes.

6. Wipe off the bulk of the paste with the cotton roll when removing it (Fig. 6). Rinse the area with water from a syringe, and instruct the patient to expectorate.

7. Examine the tooth surface with an explorer and air to determine the efficacy of the treatment (Fig. 7).

U. S. Naval Training Center.

The Editor's Page

A STARTLING announcement was made in mid-May by the War Department: the June dental college graduates being trained under the ASTP would be honorably discharged from the military service. These young men who have been trained, in part, at government expense are to revert to a civilian status. They are "expected" to apply for commissions in the Navy Dental Corps, in the Veterans' Administration, or in the United States Public Health Service. Nothing compels them to do so. After their honorable discharge from the Army, they will be required to register under Selective Service. Because they are engaged in an essential health occupation, they may seek and may be granted occupational deferments. It is incongruous that these young men, robust and in prime military age, may be engaged in civilian practice as honorably discharged veterans, while older dentists of many years' practice and with longer and more active military records are kept in the Service.

To be sure, it is much better that these recent graduates be discharged from the Army than to have them inducted as privates. At present there are no vacancies in the Dental Corps. The future demands for dental service will depend on the progress of the war. There may be a call for more officers, but it is more likely that, with the preliminary training period passed and with the transfer of soldiers to theaters of operation, there will be less demand for dental service. If that is the case, it would seem more sensible to separate some of the older dental officers. This would allow promotions for some of the younger officers who have been in the Army a year or two, and would create vacancies at the bottom for the recent college graduates. It is true that some of the older officers in the higher grades and in responsible positions should not be separated from the Service. It might be well if the cases of all dental officers past the age of forty were reviewed, and separations were granted on application and approval to all those in the grades of first lieutenant and captain. It is presumed that officers serving in company grades are with technical units or are operators in dental clinics, and that their positions might be filled by younger officers.

This sudden collapse of the ASTP is of serious concern to the American Dental Association and to the American Association of Dental Schools. It means that there will be only a trickle of students entering the dental colleges. There will be a few honorably discharged veterans, a few men physically disqualified by the Selective Service, and a few women. Dentistry is not a career for the physically disabled—for casualties of the war, or for those disabled at birth or in life. It is not likely that women in large numbers will be attracted to dentistry as a life's work. There is no evidence to suggest that more women are entering this professional field.

The right kind of young men do not look with enthusiasm toward being assigned to a college as part of their military service. They think that this is ignoble and a slacker's retreat. What they do not know, and no strenuous effort has been made to impress them with this fact, is that the future supply of dentists to meet the health needs of our people is of concern to all society. Dentists cannot be trained overnight, nor in a year or two. To insure the supply of dentists for the population demands a continuous and uninterrupted flow of students. Even a war should not dam this flow.

The American Dental Association and the American Association of Dental Schools have proposed to Major General Lewis B. Hershey "that the War and Navy Departments permit not to exceed 2,000 qualified young men now in the armed forces to enter dental schools or to complete their pre-dental training in 1945. The selection of such students could, we believe, be left safely to the dental schools in cooperation with the War and Navy Departments." Up to July 7, no action has been taken on this proposal. It is unlikely that any action will be taken: the military are not conditioned to think in terms of the civilian economy or of the future health needs of the nation.

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Contra-Angles

Millions, But None for Dental Care . . .

One of the poor-little-rich girls, whose grandpappy made a fortune in the five-and-ten-cent-store business, has been sued by her former husband for letting their son's teeth fall apart. Mama, the second richest girl in the world, currently married to a cinema man, "gasped a lady-like gasp today when she learned that she was being sued on charges of letting her son's teeth deteriorate." No one can say that this little lad was neglected because his family did not have the money for dental care. There are other children like this in the country —millions of them whose parents are not as rich as little Miss Five-and-Ten-Cent-Store, but who have enough money to give their children adequate dental attention.

I dislike the idea of an authoritarian state where every action and thought is regulated by some bureaucrat, but when people with the means, and presumably with the intelligence, neglect the health of their kids while they go yachting or go sliding down the snow-capped mountains, the time has come when we need compulsory health attention in this country. We compel people to go to school until of a certain age. We compel them to serve in the Army. We should give some thought to compelling them to have health attention.

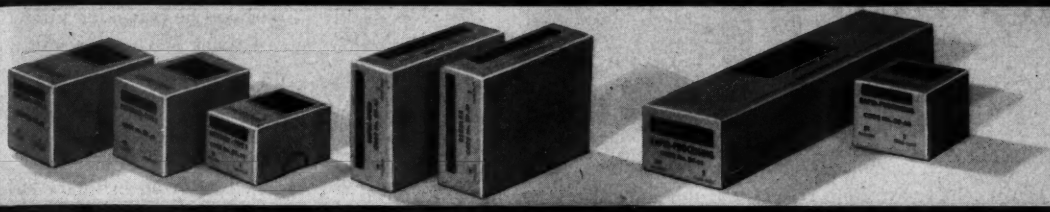
Needlecraft . . .

Earle H. Thomas, a well known Chicago oral surgeon, has published in the *Journal of Oral Surgery*[1] eighteen reasons why dentists have trouble with broken hypodermic needles. Every dentist who uses a hypodermic syringe should go over this list care-

[1]Thomas, E. H.: Recovery of Broken Hypodermic Needles in the Throat, J. Oral Surg. (January) 1943.

(*Continued on page* 324)

HERE ARE 26 CARTONS LINED UP TO REMIND YOU THAT IN



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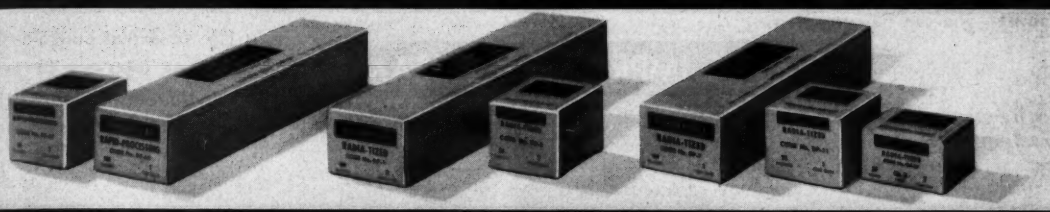

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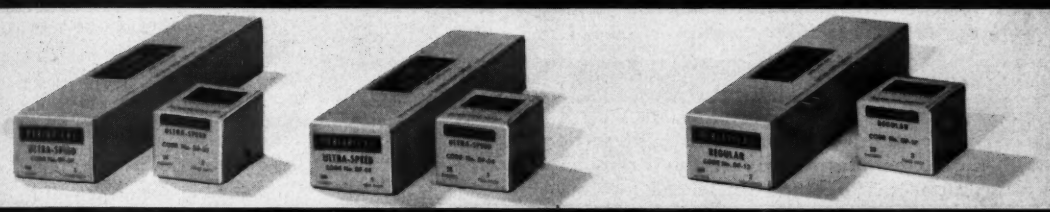

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Don't repeat even *little* things about our war program unless they've been published or broadcast. Think *before* you talk!

fully to see how many of the eighteen mistakes he is making himself:

1. Lack of knowledge of the anatomy of this (throat) region.

2. Use of a needle of defective manufacture. Every new needle should be tested before use.

3. Use of an ordinary steel needle that has been boiled several times and is, therefore, rusted on the inside.

4. Use of a platinum needle without tests at intervals to determine whether it has become brittle. A platinum needle that has been flamed several times past the point of dull red heat becomes brittle, as does one that has been bent several times in the same region.

5. Failure to caution the patient in advance not to move when he feels something touch the throat. One should never mention the word needle. The most advisable procedure is to swab the region of injection, rather forcibly, with an antiseptic solution so that the patient knows that the throat tissue is being touched. The assistant hands the syringe to the operator from behind the patient's head so that he does not see it. Telling the patient not to move when his throat is touched, the operator immediately inserts the needle through the surface tissue only and deposits some anesthetic. From there on, he can keep injecting ahead of the needle, while slowly and carefully inserting it deeper, without any sensation to the patient, until the point is in the region where the bulk of the anesthetic is to be injected. A more refined technique, here as in most other injections, calls for inserting the needle past the desired region and then withdrawing it to less than the optimal depth before depositing the bulk of the anesthetic. This procedure makes a conduit, allowing much more effective absorption of the anesthetic.

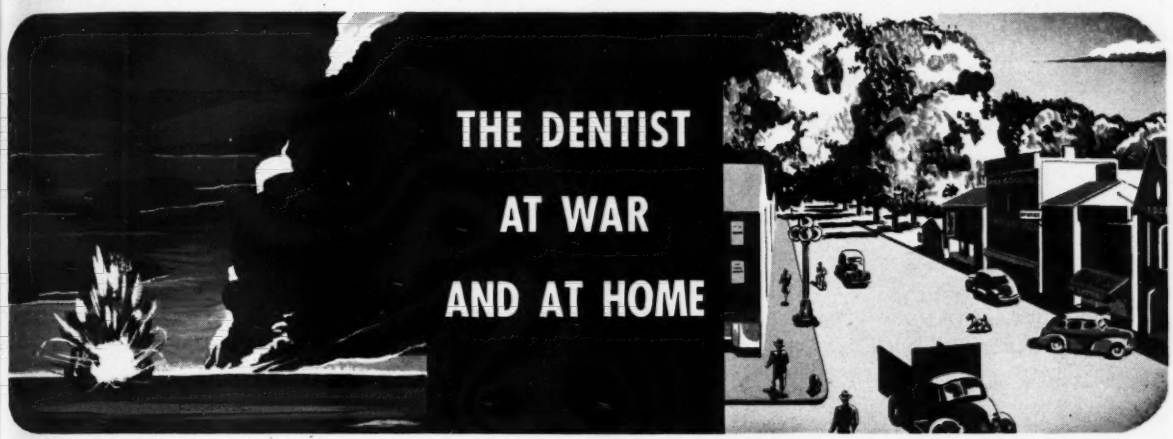
6. Failure to hold the mandible firmly while making the injection.

7. Insertion of a needle to the hub.

8. "Jabbing" of the needle deep into the tissues, resulting in unex-

(*Continued on page* 326)

THE dentist in the service makes the biggest sacrifices. He does a prodigious amount of work, sometimes under fire. We know that our awkward praise, however sincere, may sound hollow to his ears—that words cannot repay him. The best we safe-at-homes can do is provide him with the things he needs. We have made every effort to do that, and will continue to make that effort until the job is done.



The dentist at home has our admiration too. Waiting patients realize how busy he is, but few translate their inconvenience of waiting into strain placed on the seemingly tireless dentist. We who supply the dentists have come to understand their problems, problems now enlarged by the war, and we are glad that many dentists were supplied with the G-E Model CDX dental x-ray unit to help them in their heavy practice. Those who were equipped with the CDX are fortunate; they find it a reliable and efficient diagnostic aid, equal to the unusual demands of wartime practice.

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pectedly striking the ramus with the point of the needle. This variation in depth depends on the relation of the arch of the palate to the inferior dental foramen. The average depth has little relation to the depth indicated for the particular patient.

9. Insertion of a needle part way, followed by moving of the barrel of the syringe to a different angle before insertion of the needle the rest of the way.

10. Insertion of a needle to what one thinks is a proper depth without the point of the needle contacting bone, followed by an effort to make this contact by changing the angle of the barrel of the syringe.

11. Failure to caution the patient to keep the mouth open during the injection.

12. Insertion of the needle through the pterygomandibular ligament. The needle should always be inserted either buccally or lingually from this ligament.

13. Use of a dull needle. The points of all needles should be sharpened regularly on a fine stone.

14. Use of a fine gauge needle, unless one has a delicate sense of touch.

15. Insertion of a needle with the bevel side away from the surface of the bone, allowing the sharp point suddenly to catch in any irregularity on the surface of the bone.

16. Injection of the solution more rapidly than the tissues can absorb it, thus causing pain and a tendency for the patient to move the head.

17. Striking of the lingual or inferior dental nerve with the needle, producing an "electric shock" type of pain and causing the patient to move the head suddenly.

18. An effort to follow some "named" technique. One must develop his own individual technique.

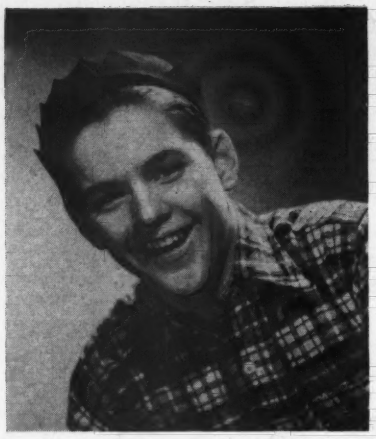
Medicine is Different . . .

The American Medical Association Meeting in Chicago in June was well attended. I was impressed with some of the differences between this meeting and large dental meetings. The medical people do not go through quite so much red tape in registration. If a person appears and wishes admittance, his whole history is not taken, as is frequently the case by dental society registrants.

Far more book publishers exhibit at medical meetings than at dental meetings. The sad presumption is that physicians are more avid readers than dentists. I am afraid this is true. Anyone who has tried to distribute books or magazines to dentists knows that their reading habits are quite primitive.

The medical people emphasize the

(*Continued on page* 328)



He'll be the kind of dental patient *his* DENTAL CHAIR EXPERIENCES *make him*

Though still very much of a youngster, Jim has reached the critical stage in relation to dentists. He has been well trained in the care of his teeth and well taught regarding the necessity of having regular dental attention. But he is human and has all the human instincts of avoiding being hurt.

Dentistry can be made easy and inviting for him. With the aid of McKesson analgesia young people like Jim are being given a concept of dental treatment that is making them loyal, cooperative patients. In addition to controlling operative pain, McKesson analgesia saves time and energy for both the patient and the operator. The two McKesson analgesia machines—the Easor and the Euthesor—have operating and economic advantages not to be found in any other analgesia equipment. We shall be glad to tell you about them.

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TOOTH PASTE

In your ORAL HYGIENE this month

Advice to Dentists Who are Working Too Hard

If this headline captured your interest, perhaps it is because Doctor George A. Swendiman's July ORAL HYGIENE article, carrying the same title, is about *you*. The editors rated it as so good and so timely that Doctor Swendiman received ORAL HYGIENE's July award of $100 for writing it. (By the way, have you yourself thought of trying for this monthly award? See page 1133 in July ORAL HYGIENE for details.)

"Army Dentists Do Not Mistreat Their Patients," by Captain Forrest M. Branch (DC), presents ideas you can use in your own *civilian* practice —tells you, in two pages, what Captain Branch discovered.

"A Dentist Writes His WAC Assistant" is a breezy letter about dental life on the home front by Doctor Arthur Isaacs.

"I Saw the Stormtroopers at My Door" vividly recounts the experiences of a German dentist, Doctor Karl David, who escaped the Nazi barbarians.

"Fear Not the Future of Dentistry," by ORAL HYGIENE's editor, presents his beliefs about the social and economic future of dentistry, including the Government's probable rôle in post-war dental practice.

"Nuts to Soup," by Doctor Samuel P. Dick, has the light touch that is welcomed occasionally during these trying days.

This month's nine departments include Picture of the Month, How to Kill a Dental Practice, Military News, Dentists in the News, Ask ORAL HYGIENE, Technique of the Month, Editorial Comment, Laffodontia, and The Corner.

war much more than do the dental societies. The scientific exhibits on the treatment of burns, fractures, the diagnosis of tropical diseases, and the rehabilitation of service men, were subjects which were covered extensively, practically, and well.

One has the feeling in looking at medical exhibits and hearing medical papers that the physician has somewhat more audacity in experimentation than has the dentist. It is true that little is known about the behavior of the cell, and that experimentation of all kinds is possible. On the other hand, the principles of physics, engineering, and mechanics, on which restorative dentistry is based, are much more inflexible and rigid and do not allow for too much imagination or audacity.

Specifically, here are several new and startling subjects that were under discussion at the American Medical Association Meeting: (1) an exclusive rice diet in the treatment of cardiovascular disease and hypertention; (2) the use of primitive tribal arrow poison, curare, as an adjunct to anesthesia; and (3) the wide acceptance of the mold, penicillin, in the treatment of infection. It took a lot of audacity to apply a mold, something that we usually think of as dirty and abhorrent, in the treatment of human disease.

An important symposium at the meeting was concerned with the abuse of rest in the treatment of disease. Imaginative physicians have observed that people who are bedridden too long develop symptoms of circulatory failure, emboli, and other serious complications. Man apparently was made to be active and not to be chained to his bed. Enforced bed rest may be more harmful to the patient than activity. This principle is being applied with good results in surgery, obstetrics, neuropsychiatry, and orthopedics. We know from our own experiences in dentistry that disuse of a part is likely to bring on the signs of disease. A tooth out of function, enjoying an inordinate type of physiologic inactivity, is a tooth that is going to become diseased.

(*Continued on page* 333)

Chemurgy . . .

A letter from a Wisconsin dentist describes rather apologetically some free-lance research that he is doing in his own laboratory. He tells about utilizing waste paper and other refuse to make artificial wood and cork. I am not going to laugh at this fellow. I have no way of knowing if the stuff he concocts in his dental laboratory is good, but I know just enough about chemurgy to know that all sorts of important things are being discovered under the necessities of war.

For instance, our government is asking us to go out into the fields this summer and collect milkweed floss. We have all seen milkweed blowing its white fluff to the winds. We are learning now that this floss is better than kapok for filler in life jackets—it is sufficiently waterproof and buoyant. We have also found that the seeds of milkweed are richer in nutritive qualities than the seeds of the soybean. The imagination and the freedom of thinking of our people will make it possible for us to win this war. We are not tied down by traditions, by a military caste system, or by a decadent philosophy of life. We are experimenters, improvisors, and tinkerers. The totalitarian people laugh at the "soft" democracies, but the people who can turn milkweed into war uses; who can make a potent piece of armament, the bazooka. from an old pipe; and who can make indistinguishable artificial eyes of acrylic—such a people cannot die.—E. J. R.

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District of Columbia Dental Society, second Tuesday in each month, Medical Society Auditorium, Washington.

•

Massachusetts Alpha Omegans, in service in this country or overseas, please communicate with Doctor Abraham Gurvitz, War Service Committee, Alpha Omega Fraternity, 371 Commonwealth Avenue, Boston.

•

National Dental Association, thirtieth annual meeting, New Central High School, Cleveland, August 14-18.

•

Ohio State Board of Dental Examiners, regular meeting, Western Reserve University School of Dentistry, September 11-13; and at Ohio State University College of Dentistry, October 9-11. The practical examination may be taken either in Cleveland or in Columbus provided due notice is given to the Secretary. The practical examination for dental hygienists will be held October 10 at Ohio State University College of Dentistry. The theory examination for both dental and dental hygiene applications will be held in Columbus, October 12-14. For information write to Doctor Earl D. Lowry, 79 East State Street, Columbus.

•

Florida State Board of Dental Examiners, regular meeting, Seminole Hotel, Jacksonville, September 18-21. For information write to Doctor A. W. Kellner, P.O. Box 155, Hollywood, Florida.

•

The Women's Dental Society of New York City, regular meetings held September 20, and November 15, Hotel Pennsylvania, New York City.

•

Odontological Society of Western Pennsylvania, annual meeting, William Penn Hotel, Pittsburgh, October 17-19.

•

University of Buffalo Dental Alumni Association, forty-third annual meeting, Hotel Statler, Buffalo, October 17-19.

•

Montreal Fall Clinic, twentieth anniversary meeting, October 25-27. For information write to Doctor M. L. Donigan, 1414 Drummond Street, Montreal, Canada.

•

Virginia State Board of Dental Examiners, regular meeting, Medical College of Virginia, Richmond, October 24 (instead of September 19 as announced previously). For information write to Doctor John M. Hughes, 715 Medical Arts Building, Richmond.

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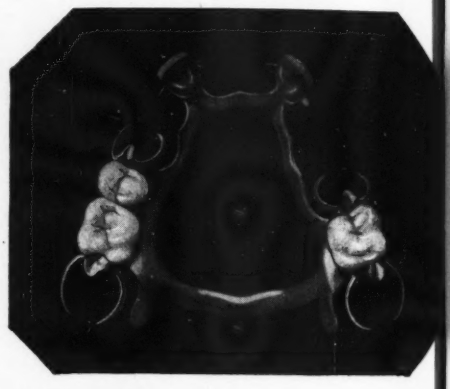

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Send Your Scrap to Jelenko. Accurate Assay; Prompt Report.

Anticoncussion Ear Plugs of Acrylic

(*Continued from page* 302)

allows for accurate detail and ease of removal, thus permitting a further extension into the canal which aids in sealing and retention.

4. After the material has set, it is removed carefully, the cotton pledget being cut away from the impression material which extends into the canal.

5. The impression of the other ear is obtained in the same manner.

6. The two impressions may be invested in the same lower half of the flask. The canal portion of the impression is placed downward so that the face of the impression is flush with the surface of the plaster. Separating medium is applied and the flasking is completed.

7. After the plaster has set, the impression is removed carefully, and the surface is painted with sodium silicate or other protective coating, dried, and a second coating of the protective medium applied.

8. Clear or pink acrylic resin is used in casting the final plug. The material is packed into both dies, and the lower half of the flask is covered with cellophane before closure. The flask is opened, more acrylic is added, the cellophane is replaced, and the halves are closed again. This procedure is repeated if additional material is necessary.

9. Before the final closure, the owner's initials are cut into the upper part of the flask.

10. The material can be processed in hot water, boiling for 1 hour, or in a vulcanizer for 1 hour at 320° C. Curing in a vulcanizer will aid in breaking down the plaster, thus facilitating its removal from the flask.

11. The outer surface of the plug is smoothed with finishing stones and sandpaper bands; polished with pumice, a buffing wheel, and brush; and washed and dried thoroughly. The gunner is instructed to apply vaseline around the canal portion of the ear plug before each insertion.

—From Medical and Surgical Devices, *U. S. N. Med. Bull.*, 43:139 (July) 1944.

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JELENKO Special INLAY CAST GOLD

TYPE A — SOFT
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per dwt. $2.00

TYPE C — HARD
More Burnishable
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A SERIES OF UNUSUAL FACTS CONCERNING THE HISTORY AND PROGRESS OF DENTISTRY

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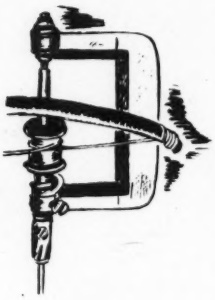
is generally credited to one Phillip Pfaff who enjoyed the distinction of being dentist to Frederick the Great (1712-1786.) Full mouth plaster impressions were developed in the United States around 1884.



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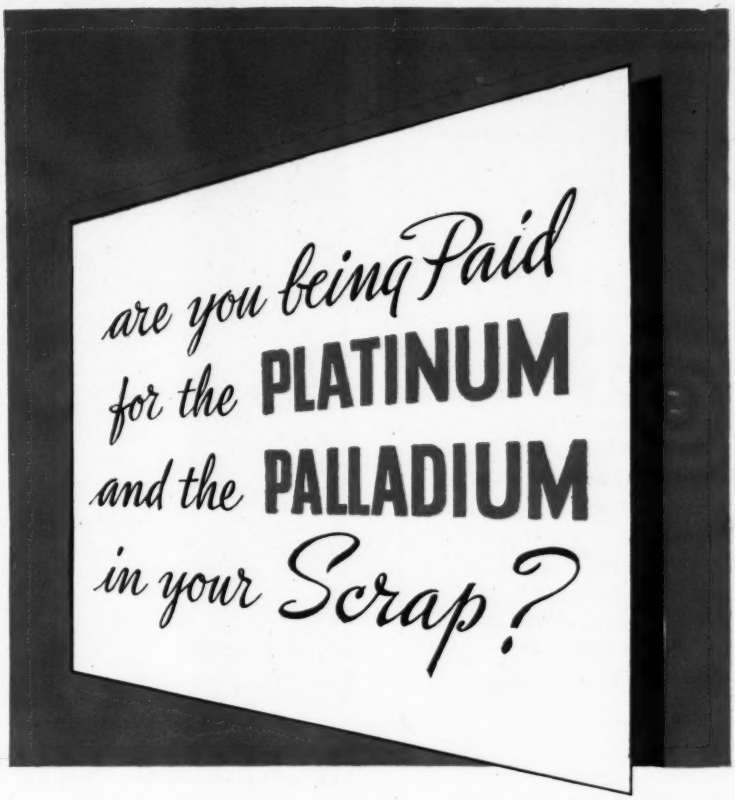

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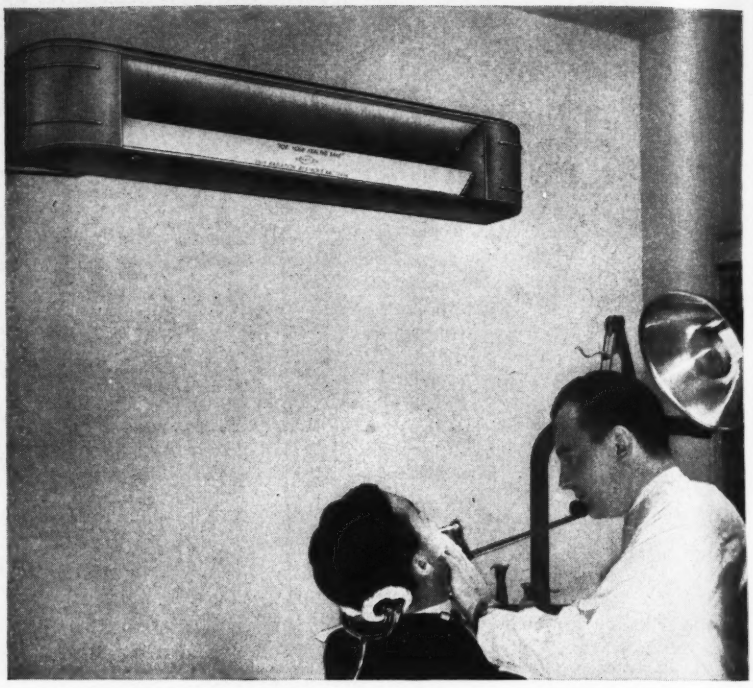

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That's the thing to do in wartime. Eat every bite of food, save every scrap of soap, make a patriotic habit of stretching all the supplies in the house so they go further, last longer.

Wear it out . . .

This year old coats, old shoes, are a badge of honor. They show you're sensible enough to know that one way to help win the war, to keep prices down, is to wear your old things out!

Make it do . . .

Before you spend a penny in wartime, ask yourself, "Do I really need this? Or do I have something now that will do?" As you patch and darn and turn, you're keeping prices down.

or do without!

When you put your money in War Bonds, savings, taxes, insurance—you're putting your money to work fighting the war and building a sound, stable nation for the peace to come.

It's your money you're saving when you help keep prices down. For it's buying too much when there's too little to buy that sends prices up. And when prices go up—and keep going up—your savings, your future, are in danger.

How can you help keep prices down?

By never spending a thin dime you could turn into a War Stamp. By thinking twice—and thinking "No"—at every urge to open your purse.

By wearing old things out, making makeshifts do. Remember, it's the things you *don't* buy that keep prices down!

See that prices go no higher . . . Be a saver—not a Buyer!

HELP US KEEP PRICES DOWN

A United States war message prepared by the War Advertising Council; approved by the Office of War Information; and contributed by this magazine in cooperation with the Magazine Publishers of America.